

***NOMINATION
FOR
HISTORIC ENGINEERING
MARKER
HEADLIE TAYLOR HEADER
HENTY, NSW
BY
THE COUNCIL OF THE
SHIRE OF CULCAIRN***

JULY, 1995

Commemorative Plaque Nomination Form

Date...24 July 1995.....

To:
Commemorative Plaque Sub-Committee
The Institution of Engineers, Australia
Engineering House
11 National Circuit
BARTON ACT 2600

From...Culcairn Shire.....

.....Council.....

.....
Nominating Body

The following work is nominated for a:-

- * ~~National Engineering Landmark~~
- * Historic Engineering Marker
- *(delete as appropriate)

Name of work.....Headlie Taylor Header.....

Location, including address and map grid reference if a fixed work.....

.....Henty Park, Allen Street, Henty.....

.....502700E, 6069100N (A.M.G.).....

Owner.....N.S.W. Farmers' Association, Henty Branch - Culcairn.....

.....Shire Council is the custodian.....

The owner has been advised of the nomination of the work and has indicated
(attach a copy of letter if available).....Support for the nomination -.....

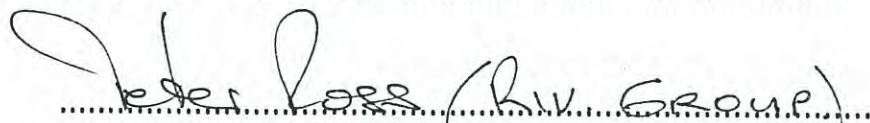
.....see attached letter.....

Access to site.....Permanent public access.....

Future care and maintenance of the work...by Culcairn Shire Council.....

Name of sponsor...Culcairn Shire Council.....

For a NEL, is an information plaque required?.....N/A.....

.....

Chairperson of Nominating Committee

.....
Chairperson of Division Heritage Committee/Panel

ADDITIONAL SUPPORTING INFORMATION

Name of work.....Headlie Taylor Header.....

Year of construction or manufacture.....Original 1915-17 Restored 1969.....

Period of operation....1915.-.1930.'s.....

Physical condition.....Sound - working order.....

Engineering Heritage Significance:-

Technological/scientific value.....Major advance in grain harvesting machinery.....

Historical value.....The principles of operation are incorporated in currently used grain harvesting machinery.....

Social value.....Major impact on Australian and world primary industry.....

Landscape or townscape value.....N/A.....

Rarity.....Only complete model of original headers in existence.....

Representativeness.....Faithful restoration of the original headers manufactured.....

Contribution to the nation or region.....Significant advance in grain harvesting methods.....

Contribution of engineering.....Original and innovative mechanical design.....

Persons associated with the work.....Inventor - Headlie S Taylor.....
.....Primary Manufacturer - H V McKay.....

Integrity.....) This header was reconstructed from parts of the original.....

Authenticity.....) nine headers manufactured 1915-1917.....

Comparable works(a) in Australia.....None known.....

(b) overseas.....None known.....

Statement of significance, its location in the supporting documentation.....
.....See attached submission.....

Citation (70 words is optimum).....See attached submission.....
.....
.....
.....
.....

Attachments to submission (if any).....Detailed submission and supporting information.....

Proposed location of plaque (if not at site).....On site.....

Branch

HENTY

The General Manager
Council Of The Shire Of Culcairn
P.O. Box 94
CULCAIRN NSW 2660

Attn. Mr Bruce Beard
Shire Engineer.

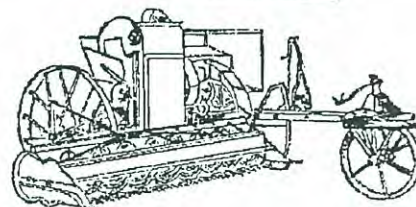
Dear Bruce,

We reference the Headlie Taylor Header :-

The Henty Branch of the NSW Farmers Association support the submission by the Culcairn Shire Council, to the National Committee on Engineering Heritage of the Institution of Engineers, Australia, for the nomination of the "Headlie Taylor Header" for recognition under the Historic Engineering Marker Programme.

Please contact us should you require any further advice or assistance,

DATE Rec'd.	4 JUL 1995
Letter No.	
File No.	
G.M.	
M.C.S.	
M.E.P.S.	
M.E.C.S.	
File	



Yours faithfully,

Wallace Taylor.



TELEPHONE: (060) 298 588
FAX: (060) 298 607

THE COUNCIL OF THE SHIRE OF CULCAIRN

ALL CORRESPONDENCE TO BE ADDRESSED TO:

THE GENERAL MANAGER
P.O. BOX 94
CULCAIRN N.S.W. 2660

17 May, 1995
Our Ref: 114:921

Mr Paul Hagenbach
"Karrindee"
VIA THE ROCK NSW 2655

Dear Sir

HEADLIE TAYLOR HEADER, HENTY

The matter of recognition of the Headlie Taylor Header by the Australian Historic Engineering Plaquing Programme conducted by the Institution of Engineers, Australia, was considered by the Council at its meeting held on 16 May, 1995.

As suggested in your correspondence of 27 April, 1995, I am pleased to advise that Council will submit a nomination for the header's recognition under the plaquing programme.

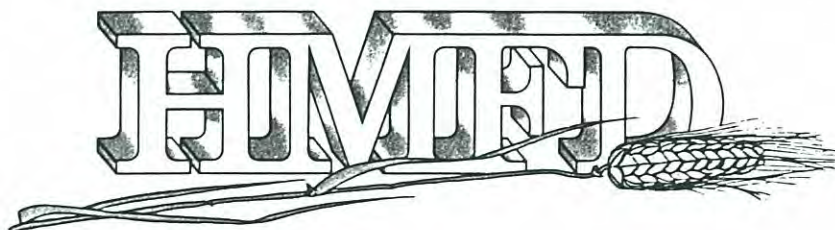
Council's Manager Engineering Services, Mr Bruce Beard, will be in contact with yourself in the near future.

Yours faithfully

A handwritten signature in black ink, appearing to read "Andrew Crakanthorp".

Andrew Crakanthorp
GENERAL MANAGER

BEB:MIH
header

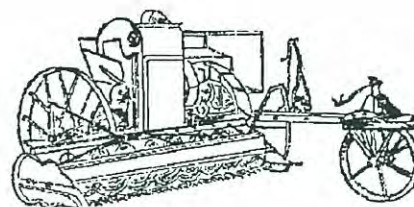


The General Manager
Council Of The Shire Of Culcairn
P.O. Box 94
CULCAIRN NSW 2660

Attn. Mr Bruce Beard
Shire Engineer.

Dear Bruce,

In reference to the Culcairn Shire Council submission
concerning the Headlie Taylor Header :-



The Henty Machinery Field Days Co-Operative Ltd, fully support the submission by the Culcairn Shire Council, to the National Committee on Engineering Heritage of the Institution of Engineers, Australia, for the nomination of the "Headlie Taylor Header" for recognition under the Historic Engineering Marker Programme.

We believe this early invention to be one of the single contributing factors to the growth of the wheat industry as we know it to-day, and given the manner and method of its invention and development in an area around 4 kilometres from the Field Days Site, it serves as a fitting and historical record of the persevering of early Australian Inventors and Engineers in finding their place in world trade.

Please contact us should you require any further advice or assistance,

Yours faithfully,
Doug Meyer
Doug Meyer
Director
July 9, 1995

SUBMISSION OF NOMINATION FOR HISTORIC ENGINEERING MARKER

HEADLIE TAYLOR HEADER, HENTY, NSW

1. INTRODUCTION
2. NOMINATION DETAILS
3. LOCATION MAP
4. STATEMENT OF SIGNIFICANCE
5. PROCESS OF DEVELOPMENT OF THE HEADER
6. TECHNICAL ADVANTAGES OF THE TAYLOR HEADER
7. THE HENTY HEADER DISPLAY
8. PHOTOGRAPHS
9. REFERENCES
10. DRAFT CITATION

ATTACHMENTS:

- * Extract from "Digging Stick to Rotary Hoe - Men and Machines in Rural Australia", by Frances Wheelhouse - published in 1966.
- * Extract from "From Early Beginnings - Henty NSW Home of the Header" - published by the Henty Centenary Committee - 1986
- * Extract from "The Australian Dictionary of Biography" Vol 12, 1891-1939 - Headlie Shipard Taylor - published by Melbourne University Press -1990.
- * Extract from "The Grain Harvesters" by G Quick and W Buchele - published by the American Society of Agricultural Engineers, 1978.
- * Copies of newspaper articles relating to the header restoration.

NOMINATION OF HEADLIE TAYLOR HEADER FOR HISTORIC ENGINEERING MARKER

1. INTRODUCTION

This submission is made to the Commemorative Plaque Sub-Committee of the National Committee on Engineering Heritage of the Institution of Engineers, Australia by the Council of the Shire of Culcairn, New South Wales.

The submission proposes recognition by the National Committee of the Headlie Taylor Header as a significant Australian engineering achievement and the subsequent placing of an Historic Engineering Marker at the site of a building housing a restored header in the Henty Park, located in Henty, New South Wales.

2. NOMINATION DETAILS

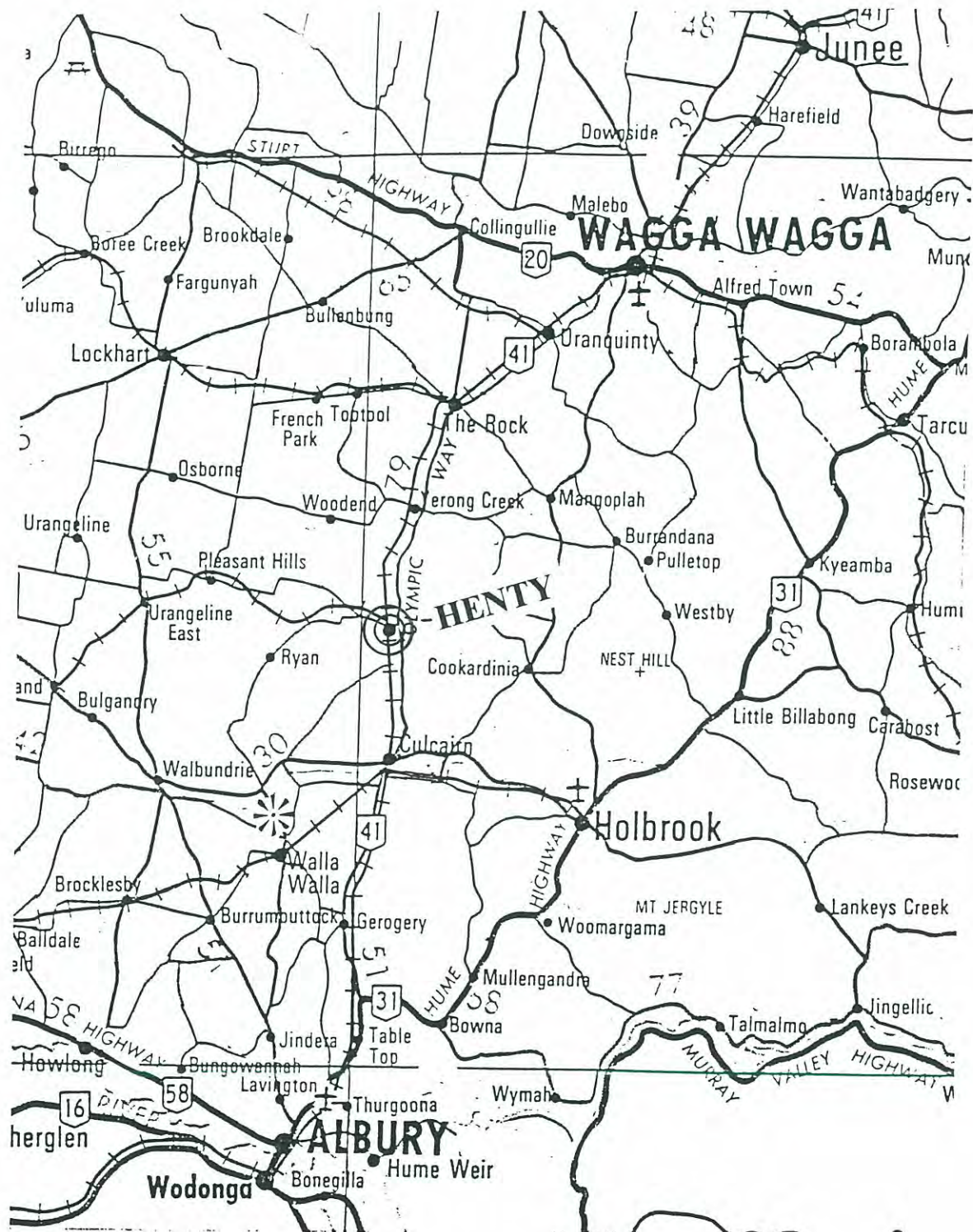
The Headlie Taylor Header on display in a purpose built commemorative building in the Henty Park, Henty, is a completely restored working unit. The header has been assembled from parts of the original three headers designed by Headlie Shipard Taylor built in Melbourne in 1915 and the first six headers built by the HV McKay company, under Taylor's supervision, in 1916-1917. The restoration was carried out in 1969 by members of the then United Farmers and Woolgrowers' Association (now the NSW Farmers Association), and is true in all respects to the original specifications. The Association housed the header, for public display, in the park with the aim of providing a memorial to Headlie Shipard Taylor, who was born at Henty on 7 July, 1883 and the role of the header in the Australian grain industry.

The header is owned by the Henty Branch of the NSW Farmers' Association and the building belongs to the Culcairn Shire Council who are now custodians of the header.

The town of Henty is located on the Main Southern Railway line and the Olympic Way, 61 kms south of Wagga Wagga and 67 kms north of Albury, in New South Wales.

This nomination is centred on the Headlie Taylor Header because of its impact on and significance to the Australian agricultural industry. The header contained a number of innovations which had a major impact on cereal grain harvesting in Australia and the world. Its operational principles allowed farmers to effectively harvest their crops under all conditions and substantially increase the yields as a result of minimising grain loss through the harvesting process.

3. LOCATION MAP



4. STATEMENT OF SIGNIFICANCE

In the late 1880's and early 1900's, Australian grain farmers were seeking a fresh approach to the collection of wheat grain from the field, an improvement to the existing harvesters. Improvements in farming practices, increasing amounts of land being taken up and higher yielding strains of wheat were substantially increasing cereal production and a more economical and efficient method of harvesting was needed.

The design, development and manufacture by Headlie Shipard Taylor, over the period 1911 to 1916 of a header harvester - later known as the header - provided the answer. At the time, the header was the best harvesting machine of its type - in the mid 1960's it was acknowledged as the basis of modern world harvesting practice. The principles of operation of the Taylor headers built in 1915 are still retained in today's machines.

Whilst it was not the first harvester developed, the many innovations in the method of harvesting grain it put into practice, made it one of the most important developments in the establishment of primary industry in Australia. The header was a compact, strong and mechanically efficient machine which provided the Australian farmer with an effective and economical method of harvesting his crop. The improved efficiency of the Taylor header was due to:-

- * the principle of cutting the heads from the crop instead of beating them off, with a subsequent loss of grain;
- * the use of spiral augers to gently deliver the heads from the comb to an elevator and thence to the threshing drum, allowing the heaviest crop to be handled;
- * a comb which remained level at all heights of operation;
- * elimination of unnecessary parts such as the large fan used in previous machines, and
- * a main drive system which eliminated wear on any particular part, thus saving the operators mechanical repair costs.

The entire design of the header provided for successful handling of crops in all conditions - light, heavy, storm damaged or weed infested.

In March, 1916, Headlie Taylor signed an agreement with Hugh Victor McKay to produce the header in McKay's factory at Sunshine in Victoria. The success of this partnership and the header was established in 1920 when more than a thousand Sunshine Headers were produced to deal with a crisis in the wheat industry. Heavy rains over the season had produced prolific growth in the crops and storms in November saw them flattened and tangled. The headers were equipped with another Headlie Taylor invention which provided for the crop to be lifted on to the comb. The harvest was completed from what was thought to be ruined crops, Australian primary industry was richer by millions of bushels of rescued grain and the Sunshine Header was credited as being the greatest of all harvesting machines.

Frances Wheelhouse in her book "Digging Stick to Rotary Hoe - Men and Machines in Rural Australia" (1966), makes the statement "It would be difficult to assess the enormous economic value of Taylor's Header to Australia and the world. Worth millions of pounds, it set a pattern for further development. Perhaps the greatest achievement of Taylor's Header is that, with its huge harvesting capacity, it substantially aided the trend towards the bulk handling of wheat in Australia."

Headlie Taylor continued to work with the HV McKay Company until 1954. He was credited with many inventions of significance to the agricultural industry.

5. PROCESS OF DEVELOPMENT OF THE HEADER

In January, 1911, Headlie Shipard Taylor was of the opinion that existing harvesters were not able to handle crops other than in ideal conditions. He established a farm workshop on the "Emerald Hill" property at Henty with the aim of building a harvester capable of dealing with crops in all conditions. The first machine was completed, ready to trial in the 1911-12 harvest, however, it was largely unsuccessful.

The original machine was redesigned and rebuilt, retaining only the wheels and axle. This header was trialed during the 1912-13 harvest and proved successful in taking off 200 acres of heavy and tangled crop.

The first patents for the machine were taken out by Taylor in October, 1913, being granted more claims for new features than had ever been given for an Australian harvesting machine.

Taylor constructed a third header in time for demonstration at the Henty Show in the Spring of 1914. The success of the demonstration encouraged him and in December, 1914, the header was worked in a ripened wheat crop where it proved to be an immediate success. In the same month, a competitive demonstration with a conventional harvester showed the grain harvesting efficiency of Taylor's header.

Headlie Taylor then attempted to secure financial support for further development but was unable to make arrangements to his satisfaction. Eventually, with the financial support of a Mr A Gale, Taylor was able to arrange for a Melbourne machinery manufacturer to construct five headers, based on his model and incorporating a few improvements. Three machines were constructed, for a total of £1,500, and Taylor sold them for £150 each to farmers at Wyalong, Brocklesby and Henty, in time for the 1915-16 harvest. The results were successful and manufacturers and farmers began to show an interest.

Taylor then contacted Hugh Victor McKay, the then largest manufacturer of agricultural equipment in Australia. McKay agreed to witness a demonstration of one of the three headers on JH Kendall's property at Henty. Subsequently in March, 1916, Taylor and McKay reached an agreement whereby Taylor would supervise the manufacturer of the Taylor Header at the McKay firm at Sunshine in Victoria.

Six headers were completed for the 1916-17 harvest, three were delivered to the Kendall property at Henty, NSW and three were sent to Stawell in Victoria. These headers were used to demonstrate the capabilities of the machine to farmers and their success prompted an increase in orders. By 1920, the header, now called the Sunshine Header, was well established and had earned the reputation "as the greatest of all harvesting machines".

Headlie Taylor continued to work with the HV McKay Company (later to become HV McKay Massey-Harris), further developing his headers. In 1924, he invented a fully self-propelled auto-header.

A detailed account of the development of the header is contained in the attached copy of a speech made by Headlie Taylor on the 50th Anniversary of the invention of his header.

6. TECHNICAL ADVANTAGES OF THE TAYLOR HEADER

The header designed by Headlie Taylor was superior to the existing harvesters because it incorporated significant innovations in its method of operation. These features can be summarised as follows:-

- * The Taylor header incorporated a knife on the comb at the front of the machine. This knife cut the heads containing grain from the straw rather than beat or tear the heads from the straw.
- * Once removed from the straw the heads are conveyed to the threshing drum, via the elevator, by two spiral augers mounted horizontally behind the cutting knife. Existing harvesters used a canvas platform to transfer the heads to the threshing drum. Taylor's method proved to be more simple and less troublesome - more positive in achieving an even flow of cut crop to the threshing function of the header.
- * Other harvesters operating at the time used two drums to win the grain by the threshing process. One to separate the grain from the straw and grain heads and the other to provide a flow of air directed from below the cleaning sieves to separate the grain from the chaff. Taylor's design carried out this function with one drum by providing vanes attached to the extremities of the single threshing drum to produce the required air flow.
- * Taylor's original headers incorporated a mechanism which allowed the comb to operate horizontally at any height, whereas the comb on existing harvesters pivoted about a fixed axis. This feature allowed the Taylor header to operate more effectively in down and tangled crops. As a further modification, in 1920, Taylor fitted crop lifters to the comb which enabled the header to raise damaged and flattened crops high enough to allow the knife to cut the straw as it passed over the comb.

7. THE HENTY HEADER DISPLAY

The Headlie Taylor Header on public display in the Henty Park is a faithful reconstruction, to original condition, of the headers produced in the period 1915-17 by a Melbourne manufacture and the HV McKay company. These headers were constructed in accordance with the specifications of Taylor's 1914-15 headers and were built under Taylor's supervision. The machine on display has been painted in the same manner as the 1914 header.

In 1968 the members of the Henty branch of the United Farmers and Woolgrowers' Association (UFWA) resolved to reconstruct the header as a memorial to Headlie Taylor and in recognition of the role of the header in the development of the Australian grain industry. Over a period of approximately 12 months, authentic parts from the original nine headers, produced in the period 1915-1917, were assembled. The major portion of parts were provided by Hugh McKay of "Jindalee", Henty, the grandson of HV McKay. He had previously salvaged parts of one of the 1916 headers from a property at Henty.

The Henty members of the UFWA commenced reconstruction of the header in June, 1969, under the supervision of one of the operators of the original headers. The reconstruction was completed in September, 1969.

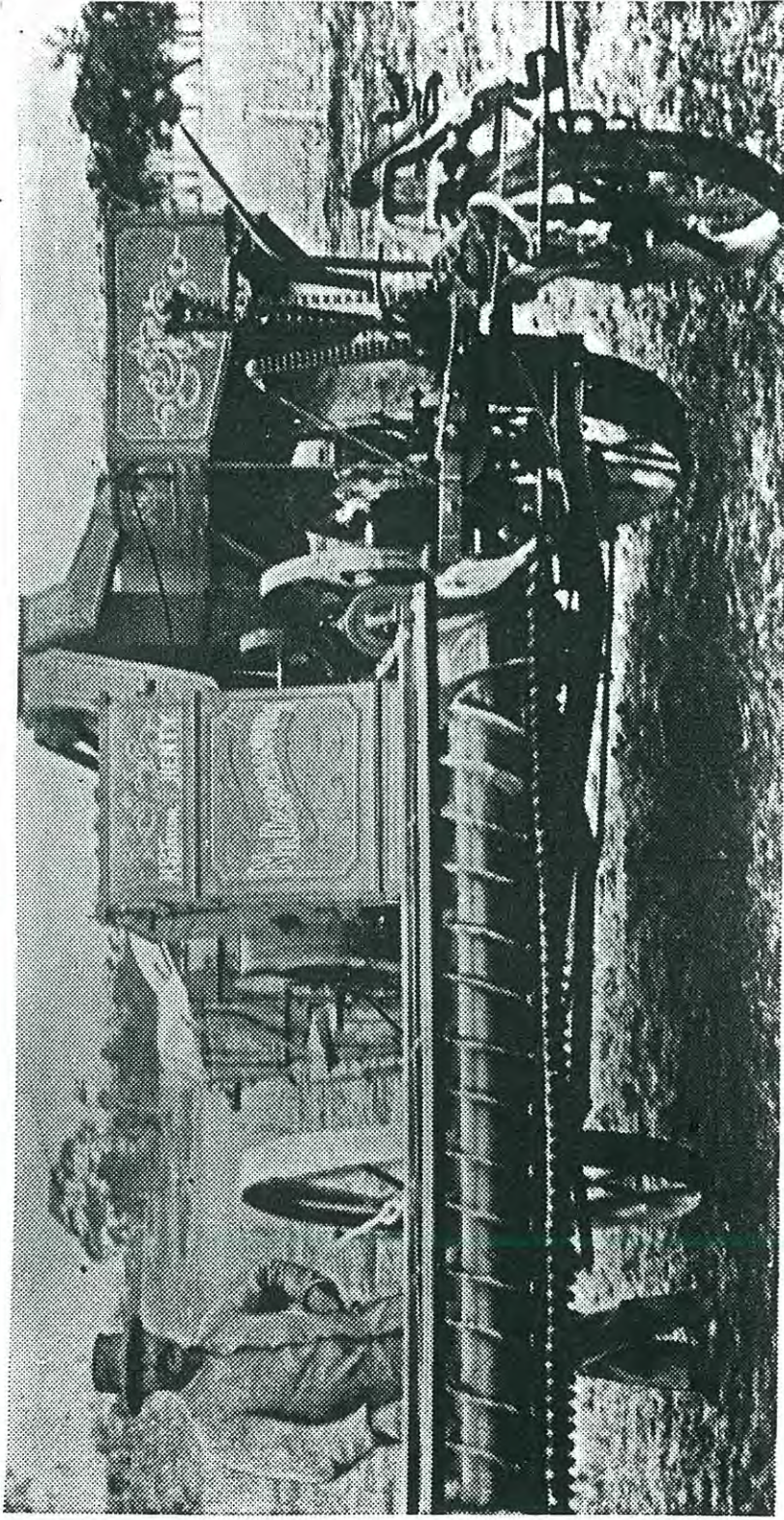
The building housing the header was completed with funds raised by the community and from a Captain Cook Bicentennial grant. The building and header exhibit was officially opened as part of the Henty community bicentennial ceremony on 17 April, 1970.

Copies of newspaper articles relating to the header reconstruction are attached.

8. PHOTOGRAPHS



THE HEADLIE TAYLOR HEADER



HEADLIE TAYLOR AND THE HEADER CONSTRUCTED BY HIM IN 1914



**THE HEADLIE TAYLOR HEADER
WORKING IN A DOWNED CROP**

**The date of this photograph is unknown, however, it is
apparent that the header is one of those first manufactured
by H.S. Taylor**



**THE BUILDING HOUSING THE H.S. TAYLOR HEADER
AT HENTY PARK**

9. REFERENCES

1. "Digging Stick to Rotary Hoe - Men and Machines in Rural Australia" by Frances Wheelhouse. Published by Cassell Australia Pty Ltd.

First published 1966.

(Extract attached to submission)

2. The Australian Dictionary of Biography, Vol. 12, 1891-1939, Smy-Z.

Published by Melbourne University Press, 1990 ISBN 0522 84437 5

(Extract attached to submission)

3. The Dictionary of Famous Australians" by Ann Atkinson.

Published by Allen & Unwin, 1992

ISBN 1 86373 1997

4. "The Grain Harvesters", by Graeme Quick and Wesley Buchele.

Published by the American Society of Agricultural Engineers, 1978.

(Extract attached to submission)

5. "From Early Beginnings - Henty, NSW Home of the Header".

Published by Henty Centenary Committee - 1986

ISBN 0 9588976 0 3

(Extract attached to submission)

10. DRAFT CITATION

HISTORIC ENGINEERING MARKER

HEADLIE TAYLOR HEADER

Headlie Shipard Taylor (1883-1957) designed and built the first three models of the header in a farm workshop at Henty in 1913-14. Subsequent versions of the header, later known as the Sunshine header, were built by the HV McKay company under the supervision of Headlie Taylor.

Taylor's innovative design produced a header which dramatically improved grain harvesting capabilities and efficiency. It is acknowledged as having contributed significantly to the change to bulk handling of grain in the Australian primary industry. The Taylor Header's principles of operation continue to be found in modern grain harvesting machines.

Dedicated by

- * The Institution of Engineers, Australia
- * The Council of the Shire of Culcairn

EXTRACT FROM

“Digging Stick to Rotary Hoe - Men and Machines in Rural Australia”

- Frances Wheelhouse

acres of land for a recreation park at Selwyn Park.

The firm of H. V. McKay-Massey Harris, the Sunshine Harvester Works, played a mammoth role in the production of war needs during the Second World War. Some of the contributions to the war effort were aircraft components, trucks and driving parts for troop carriers and tanks, forgings for modern weapons, ammunition, tools and precision gauges, shell turning lathes, torpedo control gears and radar equipment.

Hugh Victor McKay's admirers paid a great tribute to him by re-erecting at the Sunshine works the original shed in which the young McKay made his machine. A brass tablet bears the words: *The first harvester was manufactured in 1884 in this smithy at Drummartin, Victoria, by Hugh Victor McKay.* A true monument to a great Australian whose mind always thought "there must be a better way of doing the job".

This great chapter in Australian history took a new course in the 1950's when production became part of the well-known overseas firm of Massey Ferguson.

CHAPTER SEVEN

The Best Harvester of all — and "Bulking" the Grain

Headlie Shipard Taylor and the Header Harvester — harvesting machines — the Reaper Thresher — H. S. Taylor's story — McKay purchases patent rights — Header's economic value — bulk handling of wheat — Close's invention — co-operative companies — the Australian Wheat Board — modification of equipment — Australia's storage capacity

ON a spring day in 1914 in the little country town of Henty, N.S.W., an eager young inventor, Headlie Shipard Taylor, displayed his new wheat harvesting machine at the local show. All the town was talking about the machine — the culmination of three machines he had patented a year earlier.

Taylor excitedly told his spectators: "This machine is simple and economically constructed and can efficiently remove wheat heads from a standing crop, clean and collect them. Other machines have complicated structures, likely to break down when subjected to heavy or lengthy use and are often awkwardly arranged and unwieldy in size, causing heavy draught of the machine."

Taylor demonstrated the compactness and durability of his new Header. He explained its lighter draught and its ready adjustment to suit varying conditions when harvesting a wheat crop.

The farmers were suitably impressed but they felt the machine had to be seen in action — they could not judge a stationary machine. Wasn't the Stripper Harvester the best machine on the market? Hadn't it now reached a supreme place as a harvester since its invention in 1884 when it combined stripping, winnowing and bagging? The American reaper and binder was popular in many areas and the American Marsh "harvester" had proved efficient. But, although Australians had produced many significant modifications to the Stripper and Stripper Harvester, there had been a period since the 80's when new ideas were scarce. A fresh approach to collect wheat grains even more economically than the efficient Stripper Harvester was what farmers were looking for.

In 1905 a break-through machine seemed likely when three Australians — East, Charlton and Chapman (working for the Canadian firm of Massey-Harris) invented a machine combining the American-type reaper and American-type thresher into one machine referred to as a Reaper Thresher. By 1910 the Canadian firm was manufacturing this machine in Canada for specific export to Australia. The combination of reaping and threshing machines of enormous size were in use in the United States of America.

After modifications, this Canadian machine performed well and was popular with farmers. They were impressed with this new Australian idea where an eight-foot width of straw was drawn through the comb and the heads (assisted by a reel similar to the binder) came into contact with a knife to be cut off cleanly, instead of beaten off as in the Stripper and Stripper Harvester machines. Farmers were also impressed with the fact that when the heads were cut they were carried by a reel to canvas conveyors at the rear of the comb, to a feeder which forced them into a threshing drum. Pinions allowed this to be altered to faster or slower speeds. "Straw walkers" disposed of the straw and grain was fed over riddles, winnowed, and raised by elevator to a five-bag capacity box.

Oddly enough the machine was made too wide to be taken

through gates on Australian farms. But this difficulty was overcome when the grain wheel could be altered to reduce width. The machine could be placed sideways on a sledge and drawn through the gate. Was this machine to oust the existing popular Australian machines? It had many points in its favour. The important factor was that of reducing draught by cutting the straw which previously had caused so much resistance going through the combs until the wheat heads were knocked off by the action of the beaters. It was evident that a determined challenge was being made to the agricultural implement manufacturers of Australia. It was a challenge that, even with the protective tariff given to locally made implements and machines was sufficient to cause much concern and gave little room for complacency.

Earlier — striding into a new century — the Australian farmer was increasing his cereal production. More land was being taken up. Higher wheat yields were due also to the wonderful work of the plant breeders and soil fertility experts, and a new approach to seed sowing methods by drilling in the wheat, as opposed to the wasteful hand-broadcasting practice. In the early 1900's it was realised that good quality wheat brought better sales. The dual purpose wheats such as Federation, Dart's Imperial and the high-yielding Yandilla King, which could substantially increase wheat growers' returns justified harvesting every head possible.

It is easy to understand why the farmer was influenced not only by higher yields but by lower production costs. The Stripper, the Stripper Harvester, the Reaper and Binder, threshing and winnowing machines and the new Massey Harris reaper thresher machine were being dissected and analysed in the farmer's mind for economic value. The farmer had to take into account purchase price, number of horses required, the relative cost of running. By 1912 he found that the purchase price of a Stripper Harvester was £90 and that he needed 10 horses (two shifts of five each) involving a total expenditure of £400-£490. In contrast a giant new stripper from South Australia, with an eight-foot cut, could be bought for £70 and needed only six horses (two shifts of three horses

DIGGING STICK TO ROTARY HOE

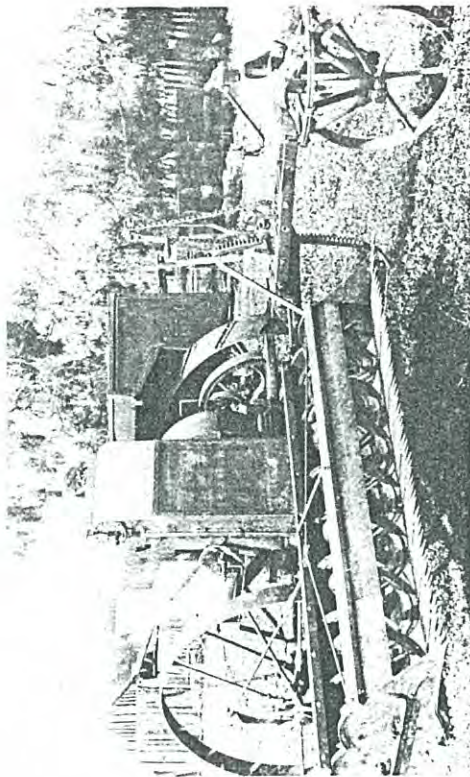
each) and required a total outlay of £310. To the farmer who already had the cheap winnower to clean the grain and labour (his family quite often) to bag it, this was a saving of £180 on a harvest. In those days farmers often found the simple operation of the Stripper less troublesome than the complicated Stripper Harvester if a breakdown occurred but the problem was to get men to perform the back-breaking job of winnowing.

The introduction into Australia by Massey Harris of a Reaper Thresher (the invention of Australians, East, Charlton and Chapman) seemed to spur other designers to modify and perfect existing machines. Ideas came from all over the country — important ideas like the Comb Protector for use on harvesters and strippers invented by L. N. L'arson and F. S. Southwell, share farmers, of Greenthorpe, N.S.W., in 1910. This gave promise of more proficient harvesting by deflecting troublesome weeds and rubbish below the comb while the stripper or harvester passed over the crop. This invention was simply constructed — prongs attached to a piece of piping worked by a lever. The prongs were set wide enough apart to permit wheat going between them to be gathered by the comb — yet set close enough to catch unwanted thistles and weeds. It was an important innovation because in this way more wheat could be gathered. For the first time, also, patches of crops that were slightly tangled could be handled.

Perhaps its biggest contribution was the reduced strain it put on the cleaning mechanism of the harvester. With less dirt, less fan blast was necessary; it also cut down the time lost previously when choked up with weeds.

Farmers were still asking — was this the best answer to wheat harvesting efficiency? Even this new application to Australian machines and the imported reaper threshers were still powerless to recover damaged crops efficiently. Despite all the advantages of the new machines the major problem of damaged crops was still unsolved. The dramatic answer came in 1913 when Headlie Shipard Taylor patented his Header Harvester (at first known also as a reaper-thresher

THE BEST HARVESTER OF ALL — AND "BULKING" THE GRAIN and later identified as the Header) — a vital step in the history of wheat harvesting machinery. It swept Australia and the world and is still the best harvesting machine of its type — acknowledged in recent years by American technical journals as the basis of modern world harvesting practice.



View of a small Header designed in 1913 by Headlie Taylor

What were the measures that led to Taylor's remarkable machine and what were its special features? The inventor's own story, was given to the author by his son, Howard, and yields a vivid portrayal of an agile mind, tenacity of purpose, faith in his machine, and his fortune in meeting H. V. McKay — one of the foremost industrialists of his time.

Headlie Shipard Taylor was born in Henty, N.S.W., on July 7, 1883, and he lived in the district continually until 1915 when he went to Melbourne to supervise the building of a number of headers. He had become firmly convinced that a harvesting machine could be constructed that could handle the grain crop more economically than the Stripper Harvester, then at the zenith of its fame.

The most popular machine on the market at the time was the famous Sunshine Stripper Harvester, invented and manufactured by Hugh Victor McKay. This was a combina-

DIGGING STICK TO ROTARY HOE

tion of two earlier inventions — the stripper and the winnower. The combined machine first built by Mr. McKay in 1884 proved such a labour-saving device that it was used by farmers all over Australia and other manufacturers tried to build similar machines. In a few years there were many different types of stripper harvesters working in Australian grain fields. Taylor knew that the Stripper Harvester worked well in standing crops but its efforts to rescue the grain from down and tangled crops meant considerable waste of grain.

"It was this failing which caused me to wonder if a machine could be devised which could handle the tangled mass of down crop without such a loss," Taylor said. "In January, 1911, I was ready to start building the machine of my dreams. I had to enlarge the little farm workshop and install a lathe, power drilling machine, emery wheel, and other fixtures. I realised that progress would be slow and two or three years might pass before success or failure could be proved. But I was determined to give my plans a practical test — and there was no turning back. I had confidence in my ability to do the job itself but I was worried by finance. Would I be able to hold out long enough to accomplish my desire? I could only hope for the best."

Taylor bought books on mechanical drawing, pattern making, moulding — any book he thought would help him. All he had to guide him were the knowledge he gained from these books and plain common sense. It was very difficult to obtain books and get engineering jobs done in Henty in those years. Taylor said: "If I should need a 'striker' for a small job I had to call on the good offices of my sisters, and if the job was a heavy one it



Headie Shipard Taylor. His genius produced the Header Harvester in 1913 which could successfully harvest storm-damaged crops

THE BEST HARVESTER OF ALL — AND "BULKING" THE GRAIN simply had to wait until one of my brothers came home at night."

He worked day and night to have his machine ready for a trial in the 1911-12 harvest. When he completed it most of the crops had been harvested but he had reserved a small paddock of standing crop close to the workshop. He drove the machine into the crop but he took nearly half a day to get around the paddock. There were frequent stoppages and the comb knocked down more heads than it gathered. He took the machine back to the workshop and decided to take a holiday before trying to re-design the machine. When he returned from a three-week holiday, he began work on the header immediately.

Taylor re-designed the whole machine, retaining only the wheels and axle. After the gruelling task of building the first machine single-handed he employed a friend, Mr. Ralph Garth, to assist him. They both completed the new machine in time for a trial on the next year's crop. With a few minor adjustments the header worked well and took off about 200 acres, some of it fairly heavy crop and badly tangled. Taylor knew he was on the right track. He took out first patents for the machine in October, 1913, and was granted more claims for novel features than had ever been given for an Australian harvesting machine. Taylor then set to work on a third header, aiming to have it completed for exhibition at the Henty Show in the spring of 1914. He finished his task just two days before the show.

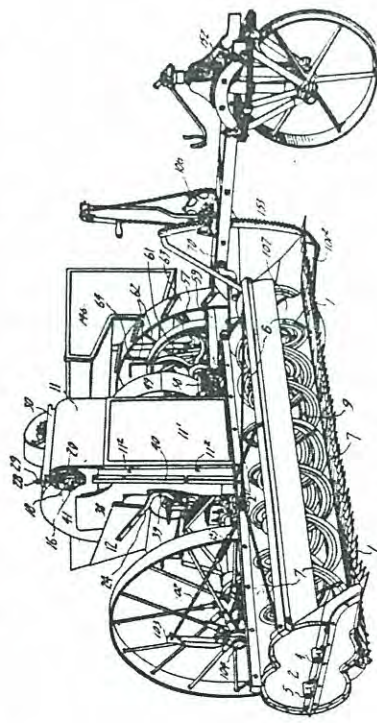
"The new machine was the centre of attraction at the show and excited considerable comment among visiting farmers," Taylor says. "Some conceded it might work; others championed it manfully and said there was no doubt of its ability to harvest a crop. When I saw the farmers' interest in the machine it was something of an antidote to the discouraging remarks of people who said they could never understand why I had wasted my time and money on such a thing. The encouragement I received at that little Henty Show was a welcome stimulant to my sorely tried ambitions."

Taylor's new header was taken into a ripened wheat crop

DIGGING STICK TO ROTARY HOE

in December, 1914, and was an immediate success. He experimented with the machine for a few days and then challenged his brother, Horace, to secure as much wheat per acre with his harvester as he could garner with the new header. Horace took up the challenge but was beaten decisively. The harvester could not get within half a bag to the acre of the yield of the header. Taylor was so encouraged by this that he felt he was ready to demonstrate the header at work in a heavy crop. At the demonstration, several influential farmers immediately offered to finance a company, with £59,000 capital, to build the machine. But Taylor rejected the offer as he thought it would be insufficient capital for the necessary expenditure before production commenced.

Taylor tried to place the invention with some existing organisation but he could not get any manufacturer to entertain a proposition for the purchase of his patent rights.



Taylor's Header Harvester

Expenses from 1911 to 1914 were so heavy that Taylor had to borrow from his brothers to keep going. His great problem was to keep his header before the Australian agricultural machinery manufacturers and create competition for it. He felt confident the machine could be sold to America as manufacturers had already approached him, but he wanted to keep it for Australia. He knew he had to "sell" his machine to the makers but they had their own harvesting

THE BEST HARVESTER OF ALL — AND "BULKING" THE GRAIN

machines and were unwilling to take any risk with a farmer's invention that had not been properly tested.

Then Taylor had a stroke of luck when Mr. A. Gale, of Albury, advanced him as much finance as he required. A Melbourne machinery manufacturer arranged to build five headers, on the same lines as his model machine, and incorporating a few improvements. Work began in April, 1915. Patterns, bulldozer blocks and tools of all description had to be made so that the machine would be built to a standard pattern and each part duplicated. Although Taylor had to pay for five machines, only three were ready in time for the 1915-16 harvest. The three machines cost Taylor a total of £1500 and he sold them for £150 each to Mr. Nottle, of Wyalong, N.S.W., Mr. Shipard, of Brocklesby, N.S.W. and Mr. J. Kendall, of Henty, N.S.W.

Results were satisfactory and he was widely congratulated on the work performed by the machines. News of their success spread quickly; manufacturers and farmers came long distances to watch the machines at work.



The 1915 Header, one of three made at Spotswood, Victoria, under contract for Mr. H. S. Taylor. The machine was purchased by Mr. A. J. Kendall, of Henty, N.S.W., who worked it for 13 years and stripped 106,110 bushels of wheat and 29,130 bushels of oats with it

Taylor knew the real test of his machine was near and he arranged for another demonstration on the farm of Mr. J. Kendall at Henty in a tall and heavy crop. He wrote direct to Hugh Victor McKay, by now the largest manufacturer of agricultural equipment in Australia, who promised to inspect the machine in a few days.

"It was with pardonable trepidation that I prepared to demonstrate the capabilities of my header in Mr. McKay's presence," Taylor says. "I drove into the crop and McKay accompanied me, sometimes walking behind to observe its action and work. We went round the paddock and the shrewd McKay closely examined the machine and its work from every angle. He said the header was very simple, light in draught and incorporated many novel features. 'But,' McKay asked, 'what advantages do you claim over the Stripper Harvester?' 'I replied that I could handle a heavy lodged crop and get practically the whole of the grain from it. McKay then said he was prepared to negotiate for the patent rights. This was a tremendous thrill for me and we parted on the understanding that I was to visit Sunshine a few days hence to open negotiations."



The invention originally referred to as a Reaper Thresher. To avoid confusion, the machine was then termed the Header, and H. V. McKay of Melbourne took on its manufacture and employed the inventor

On March 4, 1916, after protracted negotiations, an agreement was signed. Taylor was relieved to know that his machine would be sponsored by a firm whose success was based on solid foundations of service and he was confident that the header would be a boon to the grain growers of Australia. The agreement provided that Taylor was to supervise the building of the header for two years and, on April 6, 1916, Taylor began operations with Hugh Victor McKay at Sunshine. The first programme was for six machines, to be completed for the 1916-17 harvest. Fresh templates were made and Taylor had a busy time supervising the making and assembling of the parts. But he knew now that his invention was on the way to success. Even Taylor, with his unbounded faith, was surprised at the triumph of the header. The six "Taylor Headers" worked well in the 1916-17 harvest and soon many orders began to flow in. The demand grew year by year and in 1920-21 the header (now called the Sunshine Header) was at the forefront of public favour and saving Australian farmers millions of bushels of wheat.

In 1920 heavy rain caused such a prolific growth that the crops were "over the fences" in a large part of the Eastern Australian wheat belt, particularly in the north-west districts of New South Wales. Farmers panicked when they saw their heavy crops flattened and tangled by violent storms in November. But Taylor thought: "Here was the supreme chance for the Sunshine Header to prove its worth and save the crops." The factory worked day and night and, in November-December, more than a thousand of these machines were driven into the storm-flattened crops, each machine equipped with a specially designed "Headlie" crop lifter (a set of wooden fingers that lifted the crop on to the comb). There was no doubt of the results — his dreams were an accomplished fact. Astonished farmers secured 30 bushels of wheat to the acre from crops they thought had been ruined. Never before had such tangled crops been harvested without heavy loss. Australian farmers were richer by millions of bushels of rescued grain and the Sunshine Header won a reputation as the greatest of all harvesting machines.

DIGGING STICK TO ROTARY HOE

Taylor sums up the reasons for the success of the Sunshine Header in this way:

1. The principle of the header is to *cut* the heads from the standing crop instead of beating them off and threshing the grain from the heads.
2. The remarkable device for quickly, yet gently removing the heads of grain from the openings of the comb the moment they are cut off. Two spirals are arranged the full length of the comb — the front one gathering up the incoming heads. Between both spirals, the heads are conveyed to the elevator which delivers the mass to the threshing drum, allowing the heaviest crop to be handled.



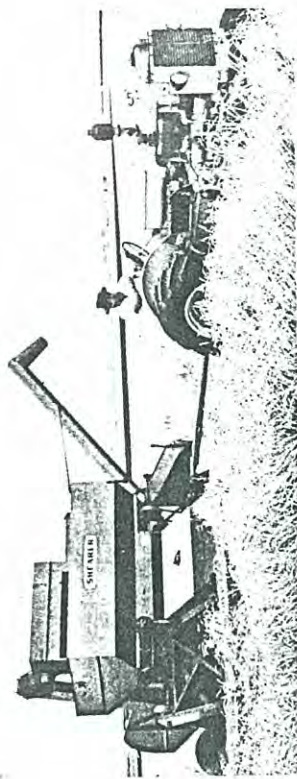
Wheat from badly damaged crops could be harvested with the Australian Header Harvester and its special crop lifting device

3. The comb remains level when raised to its highest or depressed to its lowest point. No loss of grain results from the point of the comb when harvesting a very short crop, nor is a tall crop pushed away by the breast of the comb when working at its highest point.
4. Unnecessary parts such as the large, cumbersome fan case and fan, used in generating blast in all previous machines, are eliminated. In the Sunshine Header the blast is generated by two narrow fans attached to each end of the threshing drum and enclosed by a portion of the drum case — thus making the machine very compact and strong.
5. The main drives are so distributed as to avoid undue wear on any particular part — a feature that has saved the farmer many pounds on his duplicate part bill.

THE BEST HARVESTER OF ALL — AND "BULKING" THE GRAIN

6. The entire design which enables the successful handling of every condition of crop: light, heavy, storm-tangled or weed-infested.

Taylor continued his work with H. V. McKay Massey-Harris and advanced with the times, changing his headers to engine-functioned machines capable of harvesting many different types of seeds. He produced a rice header and captured more honours by inventing the fully self-propelled auto-header in 1924. The idea of this fully self-propelled header was adopted by Americans in their machines, but Australians turned to the use of power drive from tractors (power take-off) — a popular choice since the tractor could be used as a separate power unit on so many other necessary jobs about the farm.

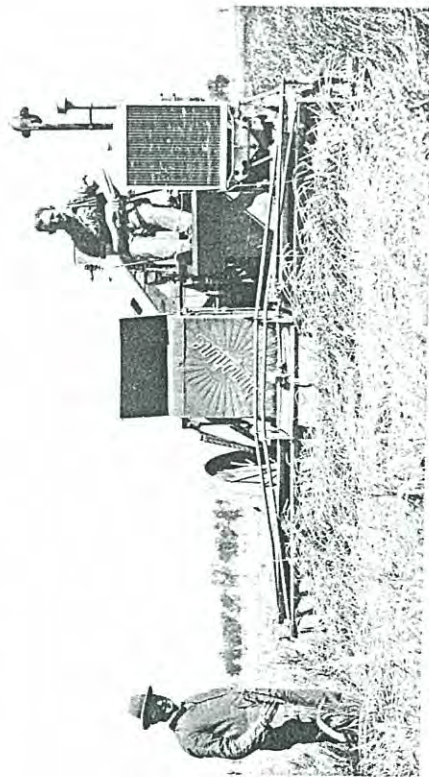


Many types of Headers are now made in Australia. The picture shows a Shearer Header from South Australia. It is driven by tractor power take-off

In 1954 Taylor retired. During his time with the firm he was credited with an amazing number of inventions to harvesting machines — pastoral renovators, bagging machines, one-operation pea harvesters, rice headers and war implements. He was probably the most prolific inventor of farm machinery in Australia. This is truly remarkable, for Taylor had little education and was mostly self-taught — but he had a brilliant inventive mind. With the help of his family and friends and with great perseverance, courage and faith in

DIGGING STICK TO ROTARY HOE

his own ideas he has established a place for himself in world agricultural history.



Headlie Taylor and the Auto Header he designed in 1924

It is regrettable that such a brilliant and courageous inventor should have died early in 1957 only three years after retirement. He left a widow, two daughters, Bernice and Gwen, and three sons, Howard, Geoffrey and John, all of Melbourne. Howard is a field test engineer with Massey Ferguson (Aust.) Ltd. and Geoffrey is employed by Connor-Shea, another farm machinery manufacturing firm.

It would be difficult to assess the enormous economic value of Taylor's Header to Australia and the world. Worth millions of pounds, it set a pattern for further development. Perhaps the greatest achievement of Taylor's Header is that, with its huge harvesting capacity, it substantially aided the trend towards the bulk handling of wheat in Australia.

New South Wales was the first State to legislate for bulk handling of wheat with the Grain Elevator Bill of 1916. The Bill was the result of much activity by farmers and the Department of Agriculture in N.S.W., formed in 1890. The Department sent a representative to the United States in 1890 to survey bulk wheat handling systems and, as a result

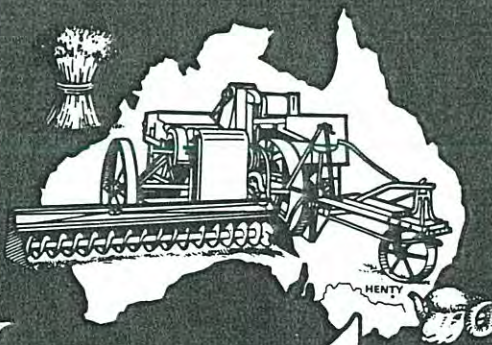
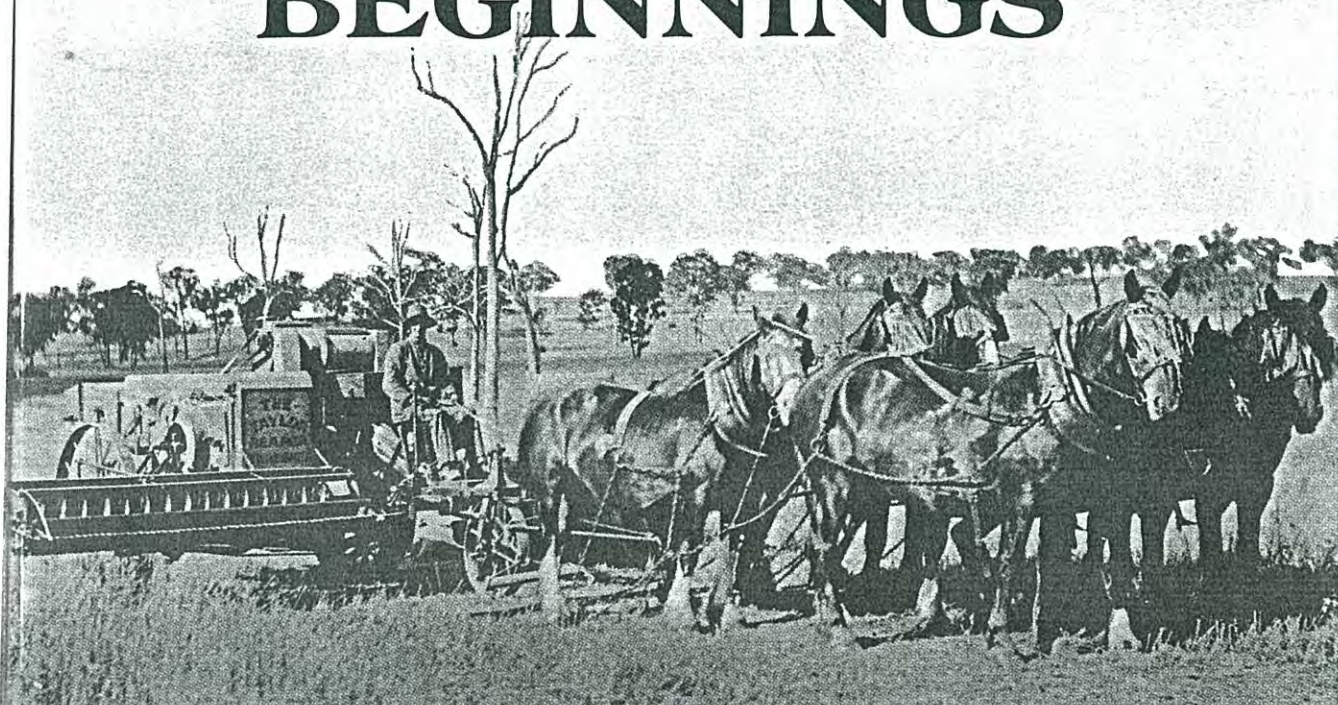
THE BEST HARVESTER OF ALL — AND "BULKING" THE GRAIN

of his findings, the Australian Government made funds available to erect reinforced concrete grain silos. The first 180 concrete silos were built by the N.S.W. Government in 1920. These country railway siding silos had a total capacity of more than 25 million bushels. These centres are now equipped with intake road weighbridges as well as hopper-type scales to weigh wheat in and out of concrete bins and fed by gravitation to railway bulk wheat trucks. As the grain flowed in from the harvest, bulkhead sheds of galvanised iron and timber were built at many centres. The sub-terminals erected at Werriis Creek, Parkes, Junee and Temora had a total capacity of 16,500,000 bushels.

Some of Australia's earliest equipment for bulk handling was made by J. T. Close, a waggon and implement maker of Finley in the Riverina District of N.S.W.. The 1923 waggons had a top made of steel and could be taken to pieces which were either stacked away or used as storage bins. This bulk waggon also had a patent bag kicker (invented by J. T. Close) which eliminated hand lifting and sewing of bags. The full bag was thrown, emptied and brought back on the kicker in one movement, without being damaged. A load of 7 tons 6 cwt. could be unloaded in 14 minutes. Other benefits which flowed from these bulk waggons were the saving of bags and twine — a saving of £8 per 1000 bags in sewing costs alone. The old eight-ton bullock and horse waggons manufactured by J. T. Close from 1893 onwards were usually loaded with 180 bags of wheat.

In N.S.W. country districts and in other States in the early 30's, wheat was tipped from bags to horse-drawn waggons after harvesting, and transported to the wheat silos. Here it was emptied first by shovelling and later by means of a slot in the floor of the waggon which opened to allow the grain to fall on the receiving grill of the silos. A further development of this early bulk handling of wheat was the adaptation of the header to enable the waggon to receive the wheat when the grain box of the header was full. Labour saving was the incentive behind this improved method since men on bagging (removing and stacking) and emptying

FROM EARLY BEGINNINGS



HentyNSW
HOME OF THE HEADER

HEADLIE SHIPARD TAYLOR

The following article is a copy of a speech made by Headlie Shipard Taylor, at the celebration of the 50th Anniversary of the invention of his H.S. Taylor Header.

This copy was lent to the Centenary Committee by Mr. Darcy Kendall of Henty, who was sent the speech by Mr. Clem Cunningham, a Works Department Manager of the Massey-Ferguson Factory in Sunshine, Victoria.

THE GENESIS OF THE SUNSHINE HEADER — By H.S. Taylor

I made my bow to the world at the little town of Henty, N.S.W. on July 7, 1883, and lived in that district continually until 1915, the year in which I went to Melbourne in order to supervise the building of a number of Headers for the dual purpose of demonstrating their capabilities to the farming community and interesting Australian agricultural machinery manufacturers in the invention.

Years of familiarity with farm machinery had given rise to certain ideas of improvement, and in the long run I became firmly convinced that a harvesting machine could be constructed that would handle the grain crop more economically than the stripper harvester, then at the zenith of its fame.

The most popular machine on the market at that time, was the famous Sunshine Stripper Harvester, invented and manufactured by Hugh Victor McKay. This machine was a combination of two earlier inventions, the Stripper and the Winnowing. The combined machine first built by Mr. McKay in 1884 proved such a labour saving device, that it was used by farmers all over Australia and efforts were made by other manufacturers to build similar machines. In a few years, there were many different types of stripper harvesters working in Australian grain fields. The stripper harvester worked well in standing crops, but its efforts to rescue the grain from down and tangled crops were attended by considerable waste of grain. It was this failing which caused me to wonder if a machine could not be devised that would handle the tangled mass of a down crop without such a deplorable loss of grain. The rough idea gave place to considered plans and January 1911 found me ready to start building the machine of my dreams.

It was first necessary considerably to enlarge this little farm workshop, as I required to install some machinery, a lathe, a power drilling machine, emery wheel and various other fixtures, beside allowing



Headlie Shipard Taylor.

room for the projected machine itself and working space.

I fully realised that my progress would be slow, with long hours of tedious work, and the likelihood of two or maybe three years passing before success or failure could be proved. However, I was determined to give my plans a practical test and there was no turning back. I had confidence in my ability to do the job itself, but the problem that gave the greatest worry, was that of finance. Would I be able to hold out long enough to accomplish my desire? I could only hope for the best.

Now came a period of book buying, books on mechanical drawing, on pattern making, on moulding, in fact any book that I thought would help me. The knowledge gained from these books, plus natural commonsense, was all I had to guide me through. It must be borne in mind that although the year 1911 does not seem so long ago, there were at that time none of the engineering facilities in country towns such as exist today. Now-a-days we have up-to-date garages even in small country towns, garages employing skilled tradesmen who would make many things that I had to make for myself in that year. If I should need a 'striker' for some small job, I had to call upon the good offices of

one of my sisters, and if the job was a heavy one it simply had to wait until one of my brothers came home at night.

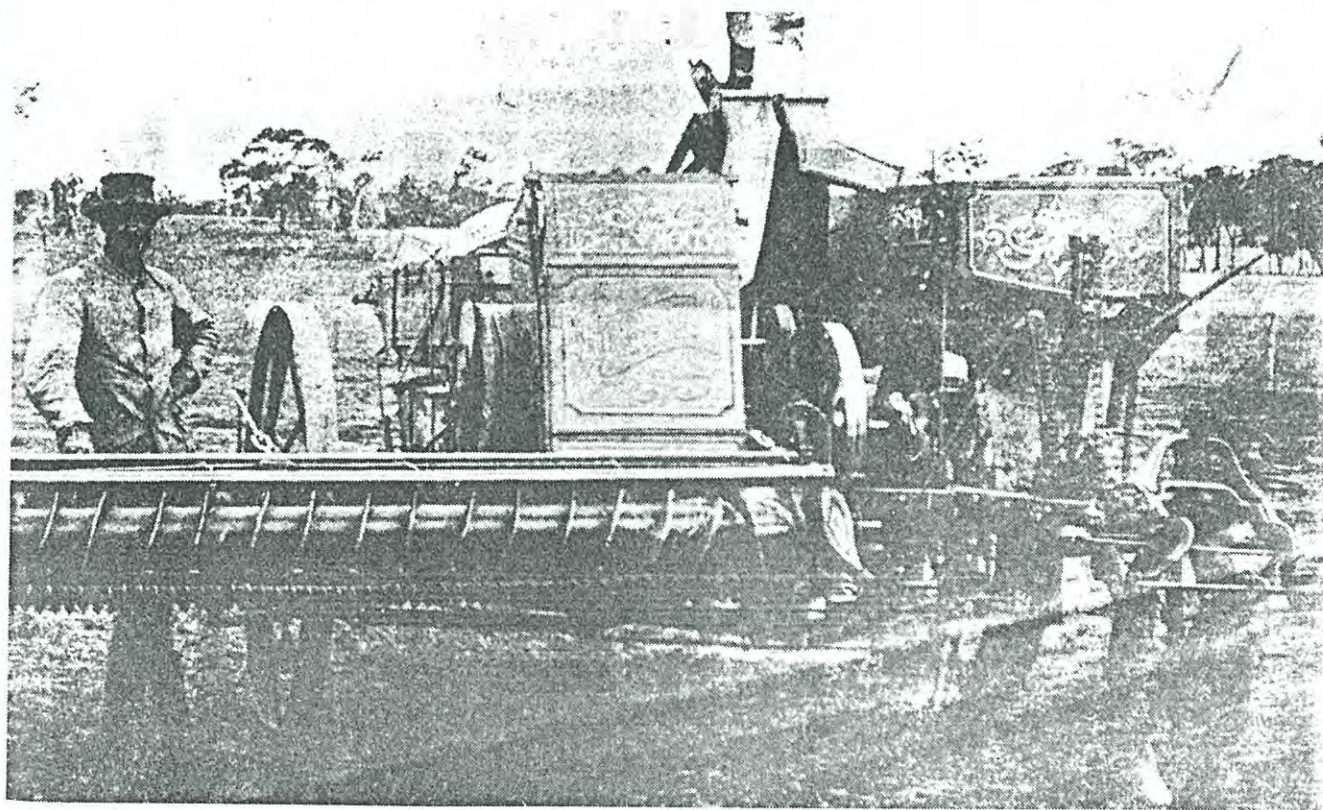
I worked practically day and night in an endeavour to have my machine ready for a trial in the 1911-12 harvest, and managed to complete it early in the new year. By then most of the crops had been harvested, but there was a small paddock of standing crop close to the workshop, that I had reserved for this purpose and into this crop I drove the machine. It was yet far from perfect, however, and I took nearly half a day to get once around the paddock. There were frequent stoppages, and fresh endeavours to get the machine going, but the comb simply would not go into the crop, and knocked down more heads than it gathered, so I took the machine back to the workshop and considered what alterations might be effected in order to overcome the trouble manifested. It was very evident that it could not be got ready for a second trial that season and feeling the effects of strenuous work and concentration, I decided to take a holiday and endeavour to freshen up for another attempt. With the exception of shearing operations, my two brothers had undertaken the work of the farm, so I was free from worry on that score, and enjoyed three weeks of complete rest, returning to the farm again fit and well.

Work on the header started immediately, and another supply of material was procured. I re-designed the entire machine, practically scrapping

the first one, and only retaining the wheels and axle. After the gruelling task of building the first machine single handed, I felt the need of someone to help me, so I employed a friend, Mr. Ralph Garth. With Mr. Garth's help, work on the second machine proceeded apace and it was complete in good time for a try-out in the 1912-13 crop. With a few minor adjustments the header worked well, and took off about 200 acres, some of it fairly heavy crop and badly down and tangled. It was now plain to me that I was on the right track, and that with my machine a heavy crop could be handled with ease, even though badly lodged and tangled.

In October, 1913 the first patents were taken out, and in fact I was granted more claims for novel features than had ever been granted for a harvesting machine before.

With the experience gained in the previous two years, both in the construction and practical working of the machine, I felt quite sure that I could build a third header that would be unbeatable, so I set to work on this third machine with a view of having it completed for exhibition at the Henty Show in the spring of 1914. It was completed alright, and painted up to some order, about two days before the show. Well I remember, as I took the machine to the showground, wondering what people would say about it, and I tried to put myself in the position of the casual onlooker, walking around the machine to see what I thought of its workmanship and design. After carefully



This picture was taken at Henty in 1914 and shows Headlie Taylor standing beside his first header.

considering it, both from the angle of workmanship and probabilities in practical work, I felt quite pleased, and there and then resolved to defend it stoutly against the most severe critics.

The new machine was quite a centre of attraction at the Show and excited considerable comment amongst visiting farmers. Some conceded that perhaps it might work, others championed it manfully and declared that there was no doubt of its ability to harvest a crop. All day long people crowded around, and I was delighted to witness the interest farmers were taking in my machine. It was something of an antidote to the discouraging remarks of people who could 'never understand why I wasted my time and money on such a thing'. When one has spent the major portion of his worldly wealth (in my case a very modest total), upon the invention, with no tangible result in the way of a return, except that of toil, a desire is created to push on to success and prove to the pessimists that they were wrong. So it will be readily understood that the encouragement I received at that little Henty Show, was a welcome stimulant to my sorely tried ambitions.

This new header, the third one I had constructed, was duly taken into the ripened wheat crop in December 1914 and worked very well indeed. Yet I was not satisfied, for further ideas of improvement presented themselves to my mind. However I experimented with the machine in the crop for a few days, and then I challenged my brother Horace to secure as much wheat per acre with his harvester as I could garner with the new header. He took up the challenge with alacrity, but was decisively beaten, for his harvester could not get within half a bag to the acre of the yield that my new machine was producing.

Here was encouragement indeed, and before the crops were all harvested, I determined to demonstrate to farmers and any agricultural machinery manufacturers interested, the manner in which a heavy crop could be handled by the new machine. A publication in the local news sheet, and letters of invitation to the various machinery manufacturers, brought quite a large concourse to the demonstration, and although the first, it was a most interesting and successful demonstration, both from point of view of the behaviour of the header in the crop and the marked enthusiasm of the audience. To give some idea of the impression my machine made, I might mention that several influential farmers straight away offered to finance a company with a capital of £50,000 to build a new machine, provided that I would supervise the work. I weighed this proposition very carefully before coming to a decision, but ultimately rejected it. A factory would have to be built, expensive machinery installed, and the chances were that many years would elapse before a profit could be shown.

I determined to try and place the invention with some existing organisation, but this was easier said than done. Every manufacturer and manufacturer's representative who saw the header work, commented upon its possibilities, and more than one admitted that if its manufacture were undertaken by others, considerable loss would ensue to their own organisation, and yet I could not get one of them to entertain a proposition for the purchase of my patent rights.

Expenses from 1911 to 1914, including the cost of taking out patents, were heavy; so heavy in fact that I had spent all my available funds and had found it necessary to borrow from my brothers in order to keep going. The great problem at that stage was to raise money so that I could keep my header before the Australian agricultural machinery manufacturers and create competition for its acquirements. I felt sure I had an invention that would easily be disposed of in America, and indeed feelers had already been put out on behalf of American manufacturers; but I had definitely decided that the machine would not go out of this country, if it were possible to come to reasonable terms with an Australian manufactory. Clearly then, the thing to do was to create a competitive desire for my invention amongst Australian manufacturers, but it was not so clear how I was to go about it. The manufacturers had their own harvesting machines and were unwilling to go to any lengths to secure a farmers invention that had not been thoroughly tested out. Here was the solution of the problem. I knew what the header would do, and had faith in it. They had witnessed or heard of one small demonstration, but the impression had not lasted. I must test my machine out thoroughly and force the manufacturers to become interested.

Several farmers had wanted the machine after seeing it demonstrated, so it was quite an easy matter to book a few orders, far easier than it was to get the machine built.

Finance was the great barrier. The first few machines would cost a lot more than I could charge for them and I had very little money to draw upon. However, I decided to try and build five or six machines for sale, and set about endeavouring to raise the money. And here I met with unexpected success. I knew that I had some staunch friends, but I did not know until then what true friends they were. Believe me, 'a friend in need is a friend indeed', and I was advanced as much money as I required by Mr. A. Gale, of Albury.

A machinery manufacturer in Melbourne arranged to build me five headers, on the same lines as my model machine, but incorporating a few improvements that I had decided upon after the trial. My model machine was trucked to Melbourne, and in the month of April 1915 work commenced.

What a job it was! Patterns, bulldozer blocks, and tools of all sorts had to be made, so that the machine would be built to a standard pattern and each part duplicated. Although I had to pay for the five machines, only three could be got ready for the 1915-16 harvest. These three machines cost me £1,500 and as I sold them for £150 each, I had in no uncertain manner 'burnt my boats behind me'.

The three machines were duly started in the harvest of 1915, the purchasers being Mr. Nottle of Wyalong, N.S.W., Mr. P. Shipard of Brocklesby and Mr. J.H.E. Kendall of 'Wattle Grove', Henty, N.S.W. Results were in each case satisfactory, and I was everywhere congratulated on the work the machines were doing. News of their success spread rapidly over a great part of N.S.W., assisted by the timely pars in some of the leading papers, and manufacturers as well as farmers came long distances to see the machine at work.

To provide an opportunity for those manufacturers who had not seen the machine at work, I arranged another demonstration, this time on the farm of Mr. J.H.E. Kendall at Henty, in a crop that was tall and heavy. The demonstration was widely advertised, and to make certain of success in the quarter wherein my hopes were centred, I wrote direct to the largest manufacturer of agricultural machinery in Australia, stating that I would like him to witness the trial. A couple of days later a reply came to hand regretting the writer's inability to be present at the trial, but promising to come along a few days later. The trial was held and was a success, as I knew it would be, but my thoughts were centred on a trial that would take place in a few days time. My visitor arrived as promised. He was the late Hugh Victor McKay, inventor of the stripper harvester thirty years previously, and the founder of that great manufacturing concern which bears his name, a name which is a household word from coast to coast of Australia.

It was with pardonable trepidation that I prepared to demonstrate the capabilities of my header in the presence of Mr. McKay. I drove into the crop and my visitor accompanied me, sometimes walking behind, the better to observe its action and work. We went around the paddock and Mr. McKay closely examined the machine and its work from every angle. He stated that undoubtedly my machine was very simple, light in draught and that it incorporated many novel features. 'But' he asked, 'What advantages do you claim over the stripper harvester?' I replied that I could handle a heavy lodged crop and get practically the whole of grain from it; whereupon Mr. McKay remarked that if such was the case, he was prepared to negotiate for the patent rights. We had a long talk on the subject and eventually departed, with an understanding that I was to visit Sunshine a few days hence with a view to opening negotiations.

An appointment was made, and I set about preparing for business. Indeed, I needed all the preparations I had made, for I was negotiating with a shrewd businessman. However, after protracted negotiations, an arrangement was arrived at. On March 4, 1916, the agreement was signed, and I had the satisfaction of knowing that the header would be manufactured in my native land. I looked forward to the future hopefully, knowing that my machine would be sponsored by a firm, whose success was based on the solid foundations of service and knowing that the header itself would prove a boon to the grain growers of Australia.

The agreement provided that I was to supervise the building of the header for at least two years, and make further alterations that were deemed advisable after closely watching the performance of the three machines that worked in the 1915 harvest. So on April 6, 1916, I started with Hugh Victor McKay at Sunshine, commencing operations in what was called the 'Motor Body Works', a large shop, separate from the factory. Our first programme was for six machines, to be completed in time for the 1916-17 harvest. Fresh templates were made and I had a busy time supervising the making and assembling of parts. My state of mind, however, was in marked contrast to that which endured whilst I built the previous machines, for uncertainty was dispelled and now my invention had an opportunity to prove its worth to the farming community. Yet, even I, with all my unbounded faith, was astounded at the extraordinary success of the header. The six machines built at Sunshine, and called at the time 'Taylor Headers', were worked in the harvest of 1916-17 and as a result, a large number of orders flowed in for delivery the following season. Each year saw the demand grow and each year the factory accommodation and plant had to be increased to cope with it; until in the harvest season of 1920-21, a crowning success was achieved, that not only placed my header (now called the Sunshine Header), at the forefront of public favour, but by its means saved millions of bushels of wheat to the farmers of Australia, that would, but for the header, have been irretrievably lost.

In that year, 1920, extraordinary favourable conditions persisted from the time the crops were sown until harvest time, and frequent falls of rain caused such a prolific growth that the crops were 'all over the fences' in a great many portions of the Eastern Australian Wheat Belt, especially in the north west districts of N.S.W. Imagine the consternation of the farmers then, when during November, violent storms lashed the heavy crops to the ground, flattening them and tangling them to such a degree that all appeared lost. Here was the supreme chance for the Sunshine Header to prove its worth and save the crops. The factory worked

day and night and November and December of that year saw over a thousand of these machines driven into storm flattened crops, each machine equipped with a specially designed 'Headlie' crop-lifter. (A set of wooden fingers that lift the crop up onto the comb.) There was no doubt of the result. Astonished farmers found themselves securing over thirty bushels of wheat to the acre, from crops which they had believed were completely ruined. Never before had down and tangled crops been harvested without heavy loss.

Australian farmers were richer by millions of bushels of rescued grain, and the Sunshine Header had won its position as the greatest of all harvesting machines. My dreams an accomplished fact.

I might aptly finish my narrative with a brief description of the Sunshine Header and some reasons for its proved superiority over other types of harvesting machines.

1. The principle of the header is to CUT the heads from the standing crops, instead of beating them off and threshing the grain from the heads as was done with the older machines.

2. The remarkable device for quickly yet gently removing the heads of grain from the openings of the comb the moment they are cut off. Two spirals are arranged the full length of the comb, the front one gathering up the incoming heads, whilst between both spirals, the heads are conveyed to the elevator

which delivers the mass to the threshing drum. With this arrangement the heaviest crop is successfully handled.

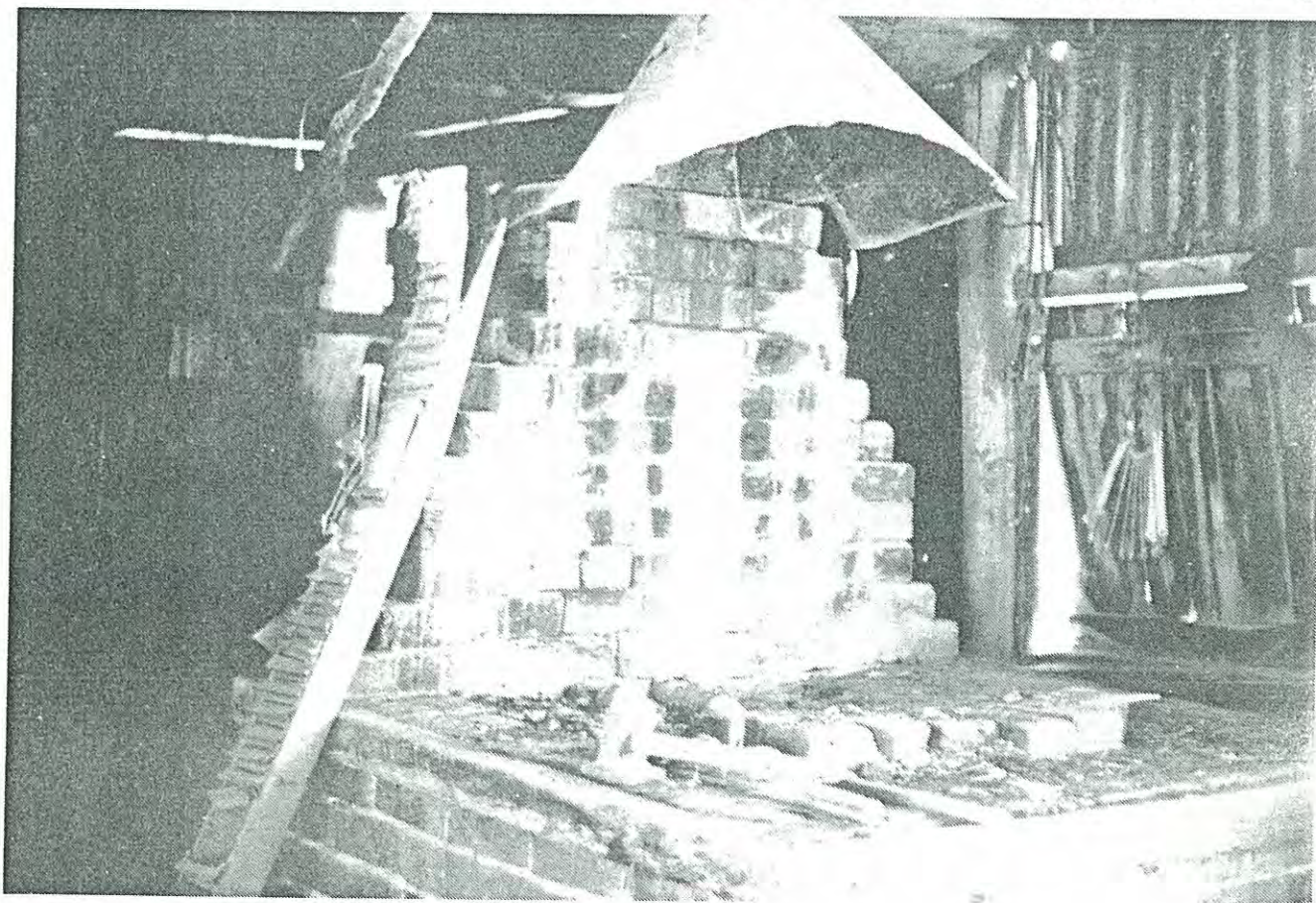
3. The comb remains level when raised to its highest or depressed to its lowest point, and no loss of grain from the point of the comb results when harvesting a very short crop, nor is a tall crop pushed away by the breast of the comb when working at its highest point.

4. Unnecessary parts such as the large fan case and fan, used for generating blast in all previous machines, are eliminated. In the Sunshine Header, the blast is generated by two quite narrow fans attached one at each end of the threshing drum, and enclosed by portion of the drum case. With such cumbersome parts omitted, it was possible to make the machine very compact and strong.

5. The main drives are so distributed as to avoid undue wear on any particular part, a feature that has saved the farmers many pounds on his duplicate part bill.

6. The entire design, which enables the successful handling of every condition of crop, light, heavy, storm tangled or weed infested.

This article was loaned to the Centenary Book Committee by Mr. Darcy Kendall, of 7 First Avenue, Henty. It was on Mr. Kendall's father's farm, that Headlie Shipard Taylor demonstrated his Header to the local farming community. Mr. Kendall, although



The Forge.

only a boy at the time has vivid memories of that event and is very knowledgeable about the workings of the Headlie Shipard Taylor Header and has several articles of memorabilia in his possession.

HEADLIE SHIPARD TAYLOR INVENTOR OF H.S. TAYLOR HEADER HARVESTER

**This report was contributed by Darcy A. Kendall,
7 First Avenue, Henty. ex 'Wattle Grove' Henty.**

In early 1900, there were several Stripper Harvesters operating, namely — Ridley, McKay and Robinson with approx. five foot combs, patented and made in Australia, also the Massey 4ft 6in comb, imported. These machines stripped the grain and husk from the standing crop, but shed a lot of grain in the process. These machines could not handle storm damaged crops and this was not satisfactory, in the view of an enterprising, mechanically minded young man, by the name of Headlie Shipard Taylor, born at Henty, July 7, 1883, the son of Mr. and Mrs. Phillip Taylor of 'Emerald Hill', Henty.

Headlie S. Taylor, in 1910 started drawing blue prints for a new type of machine. In 1911, he commenced building this new machine having an 8ft wide comb. After two production type machines and a lot of hard work, he achieved some satisfaction and some failures. In 1913-14, a redesigned machine worked to his satisfaction. He was very pleased with this machine when it passed with flying colours and stripped 200 acres of crop in the 1914 harvest. This machine was a completely new type of harvesting machine to any previously operating. In Headlie's own words, he stated — 'In October 1913, first Patents were taken out, and in fact, I was granted more claims for novel features, than had ever been granted for a harvesting machine in Australia before'.

The cutting binder knife was modified and adapted to the stripper harvester long fingered comb tooth (not the binder's tooth). This long fingered comb tooth, fitted with a cutting knife, cut off enough straw to gather all heads of grain, then the two spirals in the comb body, conveyed this material to the elevators, which elevated straw and heads to the drum for threshing before delivery to the cleaning section of the machine, where grain was separated from straw and chaff, the clean grain delivered to the grain box and the straw and chaff disposed out the rear of the machine.

The innovations of this H.S. Taylor Header, were the adaption of the binder knife to the stripper harvester's long fingered comb tooth, the two spirals in the comb body to convey heads to the elevators, the elevators to elevate heads to the drum conversion of the stationary stack thresher drum, converted from peg drum to rasp bars and

adjustable concaves to save the breaking of grain in the threshing process. The drum fitted each end with wind blast veins to create air blast for separating grain and chaff in the side shake riddle box. The straw walkers, to separate the straw from chaff and grain which is returned from the straw walkers by a grain tray fitted under the straw walkers, back to the riddle box or cleaning section of the machine.

The double tooth segment was fitted to main driving wheel for drum drive from one side, and balance of machinery driven from the other side, adjustable drum speed driven by changeable drum pinions. New feature included level lift comb from height of 8" to 38", the lifting and lowering of comb is assisted by coiled spring aid. Complete new knife drive (compared to the Binder Pitman driven knife) — this header knife is operated by a cranked roller rotating in a boxed knife head, this drive is also used for the side shake on the riddle box.

There have been few major alterations from the original 1915-16 machine, the spirals in this machine intermeshed by one inch, into each other and are chain driven from one to the other. If this chain broke, one spiral kept driving, the other spiral stopped, thus causing both spirals to be badly damaged. This fault was rectified about 1920. By separating the spirals by one inch and using an intermediate cog drive for spirals, this completely eliminated this trouble. Another alteration, was the pendulum hanger on the knife drive, which improved the first head and drive.

The comb lift and lowering was a hand turned cog and ratchet gear coil spring assisted. This was later, possibly 1920, altered to lever and ratchet coil spring. Assisted lift and lowering of comb was a great improvement.

This 1914 machine was railed to T.E. Robinson's Company in Spotswood, Melbourne. This company built the first five machines for Headlie in 1915, but owing to a mistake by the builder, its construction of front elevator from comb to drum — these elevators had to be rebuilt on farms by H.S. Taylor and only three machines became operational — one at R.F. Nottle of West Wyalong, one at P. Shipard's of Brocklesby. The third machine was for a public Field Day on Taylor's 'Emerald Hill' property, but by the time the machine was ready for operation, no crop was left for stripping. This machine was then taken to J.H.E. Kendall's adjoining property — 'Wattle Grove', where a Public Field Day and Trial was held in January 1916, with very satisfactory results, to the large crowd attending, giving great praise to Headlie Shipard Taylor for his wonderful invention.

It was two days after the main trial before H.V. McKay arrived and it took him several days of watching the header working, before H.V. McKay finally started negotiations with H.S. Taylor for

purchase of Patent Rights and Agreement to build the H.S. TAYLOR SUNSHINE HEADER. This agreement, signed on March 4, 1916, put H.S. Taylor in control of supervising the production of this machine. He also had final control of approving these machines for sale from H.V. McKay's factory and the demand for these machines increased dramatically.

The next requirement was a crop lifter (or false comb) which was patented by Taylor, called the 'Headlie Crop Lifter', for reclaiming storm damaged crops. This was a great success. The first Headlie Crop Lifter Taylor made is still in the possession of Mr. Darcy Kendall. It has been said, with some truth, that the Sunshine Taylor Header saved the 1920-21 wheat harvest in Australia. Extraordinarily, favourable conditions persisted from the time the crops were sown until harvest approached. In large areas of the wheat belt, crops were over the fences. In a world which was then beset by famine and disease, as a result of World War I, and subsequent upheavals, the bumper crop would be a gift from God. Then came wide spread storms, which lashed the heavy crops to the ground — flattening and tangling them to such a degree that they appeared lost.

To meet what appeared to be imminent calamity — the Sunshine Factory worked day and night for nearly two months to get more than 1,000 headers,

THE HEADLIE TAYLOR HEADER

This Great Harvesting Machine was invented by
HEADLIE SHIPARD TAYLOR 1885-1957 on his property 2 miles north of
HENTY and designed at the Henty Show 1914. In 1916 Patent Rights
were purchased by H.V. McKay and his firm produced the SUNSHINE
manufacturing works.

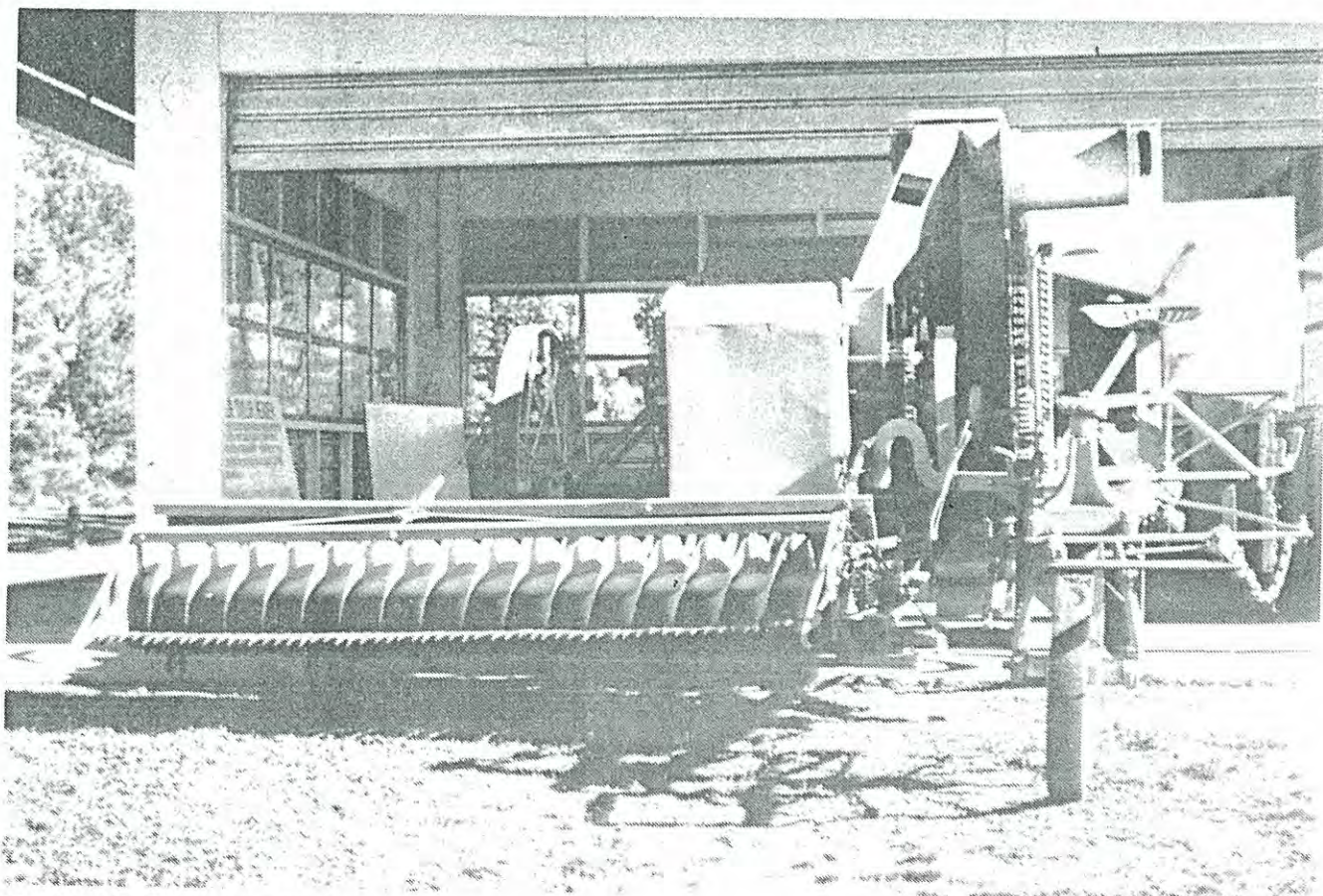
This MACHINE was reconstructed by members of the United
Farmers & Agriculturists Association using salvaged remains of the
oldest machine available. The restoration took several months to com-
plete with the help of many people in the direction of Mr. F. Howard.

The TAYLOR HEADER is regarded as the greatest single contribu-
tion to the development of the world cereal industry.
Modern combine harvesters are still constructed on the same
principle.

The Headlie Shipard Taylor Header Building in the Henty Park.

each equipped with 'Headlie Crop Lifters', into the battered harvest areas. Astonished farmers suddenly found that they were getting more than 30 bushels to the acre from crops thought to be a complete loss. The Sunshine Header had won its position as the greatest of all harvesting machines. Headlie Taylor had achieved his dream and this invention revolutionised all types of grain harvesting in Australia and the World.

From this machine, the 1924 Auto-Header evolved, having a 12ft wide comb, called the Sunshine Auto Header. This machine was engine driven by a Fordson motor. These machines were



The Headlie Shipard Taylor Header.

steered by two rear twin steering wheels of unique design, which meant only the comb of the headers entered the crop. All other sections of the machine being behind the comb meant no standing crop was damaged. For this twin rear wheel steering patent, Headlie S. Taylor was awarded Inventor of the Year Award by the Institute of Engineering of U.S.A. for year 1928.

This auto-header was the forerunner to the present day Auto-Header of Australia, also the Alcrop or Combine of overseas. There have been few major changes in design from the 1915-16 machine, also the 1924 Auto-Header, to the present day machines.

Over the 70 year period since the 1915 machine, the major principals of this machine are still retained — a very creditable achievement for Headlie S. Taylor and H.V. McKay Sunshine Headers. This 1915-16 Taylor Header Harvester was purchased by J.H.E. Kendall of 'Wattle Grove' and Headlie retained the right to experiment on this machine and build in any improvements over the next six years. So the writer of this article had a very close association with Headlie over these six years and for many more years until his death in 1957. I am the only person now living to have operated one of the first three machines that worked.

This 1915-16 machine worked all its working life

to the 1927-28 harvest on Wattle Grove, reaping 106,100 bushels of wheat and 29,130 bushels of oats. This machine was taken out of service in 1928 and was given to Headlie S. Taylor to take back to Sunshine where it was restored and put into the Sunshine Museum, on the understanding it was to be returned to me when no longer required at the Museum. When Massey Ferguson took over, they did not honour this agreement and dumped this trial machine. As both H.V. McKay and H.S. Taylor had died, I could not substantiate my claim and this machine was lost to Australian history.

This 1915-16 machine was operated by Albert J. Kendall till the 1920 harvest, when a second Sunshine Header was purchased. I then obtained and operated this trial machine from 1921 to the 1927-28 harvest. As the writer of this article, I claim Headlie Shipard Taylor never received true recognition for his outstanding service to mechanical engineering, inventiveness and great achievements that he passed on to the rural community of Australia and overseas.

Headlie Shipard Taylor was truly a great and generous man to have known. He is survived by three sons and two daughters still living in Melbourne.

An annual event in Henty's past was a Ploughing Contest, held during the years 1906 to 1918. It was a major contest to see who could plough the



In this photo we see Mr. 'Amandus' M. Eulenstein, who gained First Prize in Class A of the Ploughing Contest in around 1914-18.

EXTRACT FROM

"The Australian Dictionary of Biography"
Vol. 12, 1891-1939, Smy - Z

- Entry on Headlie Shipard Taylor

responsible for the war, and that Russia and Austria-Hungary were more to blame; furthermore, he condemned the Treaty of Versailles. Taylor was riverland representative on the advisory board of the Agricultural Bureau of South Australia and president of the Renmark Show Society. From 1919 he sat on the board of the Renmark District Hospital and was several times elected to the local council. A lay preacher at the Congregational church, he was a Freemason and a supporter of the Salvation Army. Among other projects, he championed the extension of the railway to Paringa and Renmark, the Paringa bridge and an agricultural high school for Renmark.

He had a wiry physique, wore a beard when it was no longer fashionable and dressed eccentrically: in summer his immaculate tussore suits clashed with his old sandshoes with the laces trailing. In no way materialistic, he was generous to a fault. Taylor read in several European languages and maintained an interest in foreign affairs, politics and religion. His vast collection of books, covering history, religion and English literature, was often culled to benefit the local institute and libraries. He enjoyed walking, cycling and gardening; on his block he cultivated rare plants and tried to breed koalas. Apart from his geniality and intelligence, Taylor impressed his contemporaries by the courage with which he expressed his idealism. He died of cancer on 13 February 1932 at Renmark and was buried in the cemetery there.

S. Grahame, *Where socialism failed* (London, 1912); G. Souter, *A peculiar people* (Sydney, 1968); *Pictorial Australian*, Nov-Dec 1893; *Advertiser* (Adel), 15 Feb 1932; *SMH*, 16 Feb 1932; *Murray Pioneer*, 19 Feb 1932; W. R. Crocker, 'Harry Taylor of the "Murray Pioneer"', and M. Howie, 'Harry Taylor', *Personalities remembered* (Mortlock Lib); Taylor papers (held by Mr D. Taylor, Renmark, SA).

MALCOLM SAUNDERS

TAYLOR, HEADLIE SHIPARD (1883-1957), agricultural machinery designer, was born on 7 July 1883 at Bungowannah, New South Wales, son of native-born parents Phillip Culling Taylor, farmer, and his wife Mary Jane, nee Shipard. Headlie attended school at Henty, but left aged 14 to work on his parents' wheat and sheep farm at Emerald Hill.

Convinced that farm machinery could be improved, in 1910 Taylor lodged his first patent, an improvement for stripper harvesters. Next year he set out to design a harvester which would handle storm-damaged crops better than the stripper harvester. With family support, working long shifts and teaching himself engineering, he produced his first machine for the 1911-12 harvest. Dis-

appointed with it, he constructed a successful second machine and patented his design in October 1913. Its key features were a long-fingered comb which combined with a reciprocating knife and twin spirals to convey the cut crop from the comb to the elevators. In 1914 Taylor demonstrated a third machine at the Henty show. Interested farmers offered capital to produce it, but he preferred that an existing Australian manufacturer undertake its production.

At Taylor's invitation, the agricultural machinery manufacturer H. V. McKay [q.v. 10] saw the header in action and was so impressed that he negotiated for the patent rights and engaged Taylor to supervise production of the header at his works from 6 April 1916. Output grew rapidly: 6 machines in 1916, 143 in 1917, 325 in 1918. During 1920, when widespread storms flattened crops, the factory worked day and night to produce 1024 machines equipped with special 'crop lifters'. By the end of the decade, headers outsold stripper harvesters. The first commercial harvester to combine the reciprocating knife with the Australian stripping-comb, Taylor's header provided the harvesting capacity needed in the broadacre dry farms of the wheat belt.

He also produced a string of other innovations: crop lifters (1917), pick-up attachments enabling the header to harvest field peas (1919), the 'Sunshine' engine-functioned header (1922), the 'Sunshine' auto-header (1924), a pick-up front for the auto-header (1929), the 'Sunshine' TD stripper harvester (1934), the 'Sunprong' pasture renovator (1936), power take-off mechanisms for the header (1938), a comb cleaner for the header and for stripper harvesters (1943), a cutter bar for pick-up fronts (1943) and a redesigned auto-header (1953). In World War II he designed three machines to meet the pressing need for equipment to harvest flax.

The 'Sunshine' auto-header—the first self-propelled harvester to be manufactured in large numbers—stood out as Taylor's second major achievement. Capable of harvesting at 3.5 miles (5.6 km) per hour, it had a capacity of 4 acres (1.6 ha) per hour or more. In 1929 Taylor set up a factory in Canada to make auto-headers for the North American market. Production proceeded until the merger of McKay and Massey Harris interests in 1930. In all, 932 auto-headers were produced for Australian and overseas markets.

On 26 March 1918 Headlie Taylor had married Ruby Maud Howard in the Baptist Church at Goombarganah, New South Wales. In 1954 he retired from his position as superintendent of agricultural machinery works at H. V. McKay Massey Harris Pty Ltd. Widely respected in the Henty and Sunshine

communities, he was a director of the Sunshine Employees' Trust Ltd and a member of the council of the Sunshine Technical School. Survived by his wife, three sons and two daughters, he died at Sunshine on 22 March 1957 and was cremated. His estate was valued for probate at £54 649.

From early beginnings. Henty, N.S.W., *home of the header* (Henty, NSW, 1986); F. Wheelhouse, *Digging stick to rotary hoe* (Adel, 1972); M. Newton, *Ancestry from 1590* (priv. pub. Henty, NSW, 1974); *Asian Manufacturer*, 19 Jan 1929, p 29; *Implement and Machinery Review*, 1 Mar 1929, p 1163; *Sunshine Review*, 5, no 3, Dec 1948, p 11; *Massey-Ferguson Review*, no 86, Dec 1956, p 8; *Wimmera Star*, 5 Feb 1925; Aust patent and patent application record 4394/05, 17021/10, 10989/13, 2208/16, 15959/24, 21123/24 (Patents Office, Camb); information from Mr H. H. Taylor, Ocean Grove, and Mr J. Taylor, Portarlington, Vic.

M. L. HALLETT

TAYLOR, HENRY D'ESTERRE (1853-1909), Federationist and banker, was born on 11 January 1853 at Richmond barracks, Melbourne, eldest child of Robert Crofton Taylor, mounted police cadet, and his wife Mary Jane, nee D'Esterre. In 1870 he commenced work with the Melbourne Savings Bank (State Savings Bank of Victoria).

A free trader, Taylor became a member of the Victorian branch of the Imperial Federation League in 1885; largely through his efforts it survived the collapse of the London parent organization in 1893. The league promoted closer union of the British Empire and advocated the establishment of an Imperial parliament to be composed of Britain and the self-governing members of the Empire. Taylor was honorary secretary of the Victorian branch (1895-1907) and its honorary corresponding secretary until his death.

A proponent of Australian Federation as a preliminary means to a greater end, Taylor joined the Melbourne branch of the Australian Natives' Association, hoping to gain converts. He inevitably clashed with republicans over his I.F.L. prize-winning essay, *The advantages of Imperial Federation* (Melbourne, 1888). His address, *Three great federations: Australian, national and racial* (London, 1890), delivered to the A.N.A. at Ballarat, met with approval in so far as he urged Australian Federation; but his advocacy of Imperial Federation and, ultimately, a federation of the British races (two causes later espoused by Lionel Curtis of the Round Table) aroused heated opposition. Although Taylor held that trade, defence and financial advantage would flow from Imperial Federation, others feared that in such an organization Australia's voice would be submerged. The conservative

Melbourne *Argus* supported Taylor; the radical *Age* opposed him.

Taylor was an I.F.L. delegate to the 1893 Corowa conference of the A.N.A. He claimed, with some bitterness, that it was he, rather than (Sir) John Quick [q.v. 11], who originated the famous proposal for an enabling bill; Taylor maintained that he had privately suggested the idea to Quick before having to leave the conference for another meeting. Taylor was deeply disappointed that Prime Minister (Sir) Edmund Barton [q.v. 7] and Victorian Premier (Sir) Alexander Peacock [q.v. 11] would not recognize that he and Quick had an equal claim to a knighthood. Later attempts to have the matter taken up in London also failed, but in 1900 the Prahran A.N.A. and in 1909 the Victorian I.F.L. acknowledged the justice of Taylor's claim.

An outstanding mathematician, Taylor had been inspector of branches, accountant, assistant auditor and manager of city branches of the Melbourne Savings Bank until ill health forced him to retire in March 1908. Although once castigated by an opponent as an 'Australian imbecile', Taylor was a graceful public speaker, an articulate debater and a discerning art critic. A pamphleteer for the I.F.L., he also wrote for other periodicals. He was a foundation member (1886-1906) of the Bankers' Institute of Australasia and contributed articles to its *Journal*. Tall and fair-haired, with a beard and moustache, in later years he resembled King George V. Taylor never married, but had a wide circle of friends. He died of cerebral sclerosis on 28 April 1909 at East Melbourne and was buried in Melbourne general cemetery.

Imperial Federation League Victorian branch (Melb, 1909); H. L. Hall, *Victoria's part in the Federation movement* (Lond, 1931); *Herald* (Melb), 1 May 1909; L. Foster, *The Imperial Federation League in Victoria after Australian Federation* (B.A. Hons thesis, Monash Univ, 1979); Imperial Federation League of Australia, *Letter-book* (Syd); information from documentation archivist, State Bank of Victoria.

LEONIE FOSTER

TAYLOR, HENRY JOSEPH STIRLING (1874-1948), farmer, businessman and public servant, was born on 22 October 1874 in North Melbourne, eleventh child of Scottish migrants Alexander Taylor, labourer, and his wife Jane, nee Scoles. Educated in Victoria, he joined the Western Australian postal service in the 1890s and in 1900 was postmaster at Port Hedland. He operated pearling luggers out of Broome from about 1901 and in 1910 bought a wheat farm at Kellerberrin. Finding that drought, taxes, rail freights and protective tariffs made wheat-growing unprofitable, he became convinced of the need

EXTRACT FROM

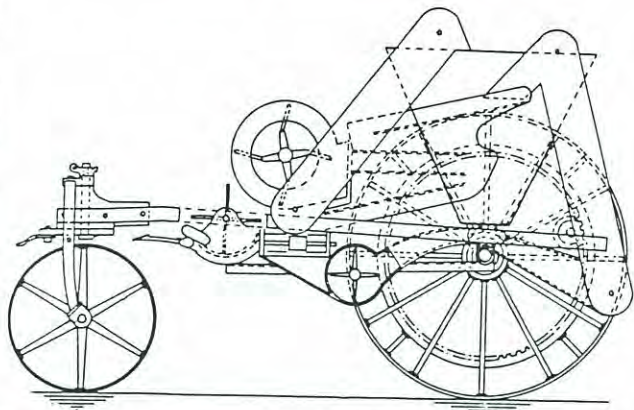
“The Grain Harvesters”

- Graeme Quick and Wesley Buchele

- American Society of Agricultural Engineers, 1978



The reaper-thresher made its debut in South Australia in 1909. This picture was taken during an official demonstration on the property of Thomas Irish, near Kadina. The demonstration was attended by the Premier of South Australia, Sir Richard Butler (Massey-Ferguson, Australia).



Australian patent No. 4394, October 19, 1905 to M.W. Charlton and D.E. Chapman was one of the foundation patents of the reaper-thresher produced by Massey-Harris for the Australian market. The patent disclosed a head which folded up for transport and a reciprocating cutterbar under the long-tooth comb. Drapers were a later addition to the design.

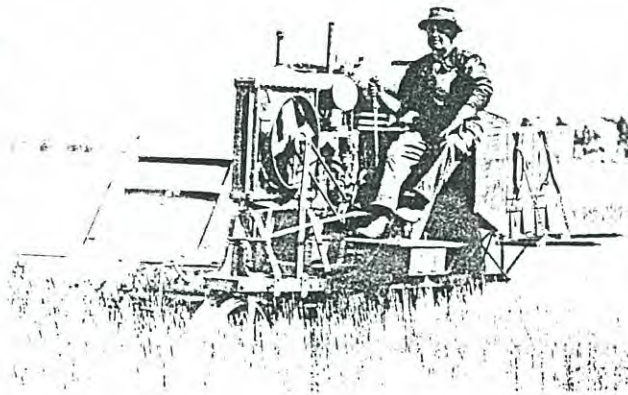
stepping stone". This proved to be somewhat optimistic. A further development was about to appear out of New South Wales—the "Header Harvester".

McKay's Self-Propelled Stripper-Harvesters

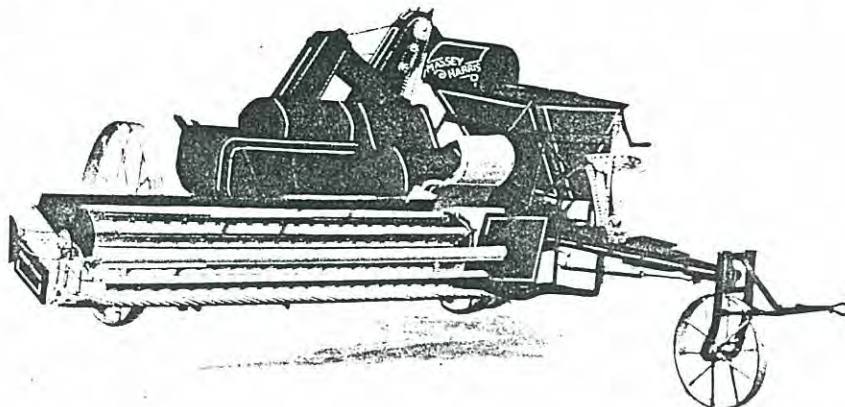
In 1909, H. V. McKay built the first of a series of self-propelled stripper-harvesters. Although he experimented with SP Harvesters for over a decade and even had one evaluated as far away as Spain, none was ever put into serial production. This work was contemporaneous with the Holt SP gasoline-powered combine, the first commercially successful SP combine.

Headlie Taylor of Henty

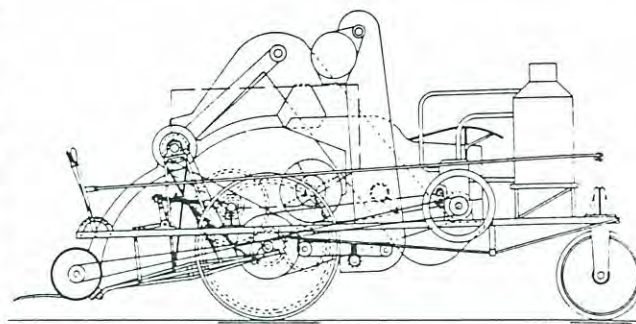
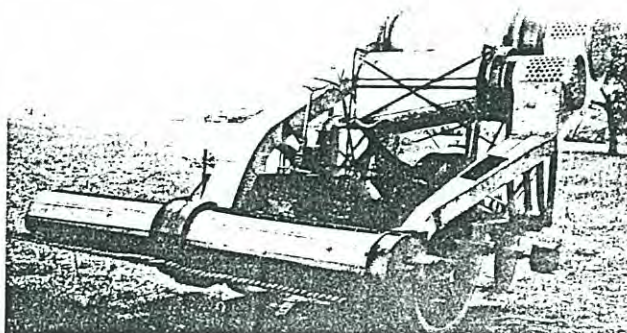
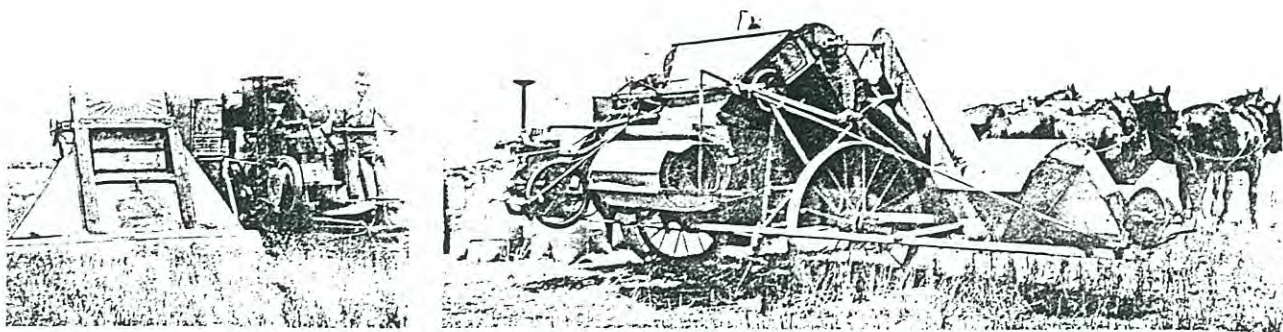
Headlie Shipard Taylor was born in 1883 and raised on the family farm at Henty, New South Wales. He showed mechanical abilities early in life, and as a young



Upper Right: McKay built several self-propelled stripper-harvesters, but they were never produced in volume. The first appeared in 1909, the same year that Holt released their gasoline-powered SP in California; Right: The Massey-Harris "No. 2 Reaper-Thresher" was introduced in Australia in 1912 with 8- and 9-foot cutting widths. Note the use of straw walkers located transverse to the frame.



Massey-Harris No. 2 Reaper-Thresher. 8-ft. cut



Clockwise from Upper Left: McKay's early SP Harvesters had tiller steering; An SP stripper-harvester with 24-foot stripper comb was evaluated by McKay around WWI. This experimental machine shows the method of conveying the crop from the individual stripper head extensions on the McKay machines; Australian patent No. 13,492 to H.V. McKay and H.S. Taylor, July 23, 1923 disclose an SP stripper-harvester.

man he rose to the challenge of improving the stripper-harvester to handle lodged and tangled crops;

"It was this failing that caused me to wonder if a machine could be devised which could handle the tangled mass of down crop without such loss," Taylor said. "In January, 1911, I was ready to start building the machine of my dreams. I had to enlarge the little farm workshop . . . I realised that progress would be slow and two or three years might pass before success or failure could be proved. But I was determined to give my plans a practical test—and there was no turning back. I had confidence in my ability to do the job itself but I was worried about finance. Would I be able to hold out long enough to accomplish my desire? I could only hope for the best."

Between 1911 and 1914, Taylor exhausted all his capital building two machines. The second succeeded in harvesting 200 acres, some of it down and tangled. He had taken out patents in October 1913, and borrowing funds to build a third machine he exhibited at the Henty show in 1914. In field trials that December, he consistently recovered several more bushels an acre than a stripper-harvester working alongside.

A key feature of Taylor's "header" design was the use of a knife under the comb and augers on the platform. There was no reel or draper canvas. The front auger swept the heads away from the comb and knife to the second auger which conveyed the crop across to the feeder-elevator, ready for transport to the threshing cylinder. The inspiration to use the augers had come to him in a flash as he contemplated two posthole digging augers leaning up against a shed.

The favorable publicity which his machine received at Henty attracted financial backing and so Taylor entered into a contract with Robinson & Co. to build headers at £1500 each. Three headers were built in 1915 by the Melbourne contractor, the firm later going into the business of producing their own headers under the "Federal" logo. The three Taylor machines were sold to farmers Nottle, Shipard and Kendall of the Henty district, New South Wales. Following this success, Taylor then wrote to McKay, the leading manufacturer in the business, and arranged for him to see the header working in a tall and rank crop on Mr. Kendall's farm. Said Taylor in 1916:

"It was with pardonable trepidation that I prepared to demonstrate the capabilities of my header in Mr. McKay's presence. I drove into the crop and McKay accompanied me, sometimes walking behind to observe its action and work. We went round the paddock and the shrewd McKay closely examined the machine and its work from every angle. He said the header was very simple, light in draught and incorporated many novel features. 'But,' McKay asked, 'what advantages do you claim over the Stripper Harvester?' I replied that I could handle a heavy lodged crop and get practically the whole of the grain from it. McKay then said he was prepared to negotiate for the patent rights. This was a tremendous thrill for me and we parted on the understanding that I was to visit Sunshine a few days hence to open negotiations."

McKay recognized in Taylor a man of similar cast. Hired in April, 1916, Taylor was installed at Sunshine, not only in charge of producing his machine, but

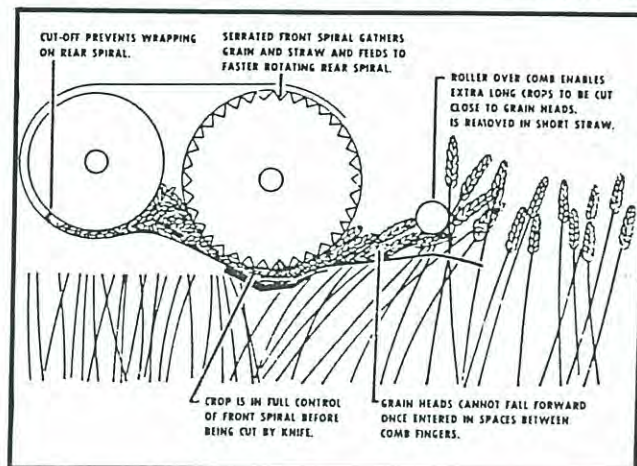
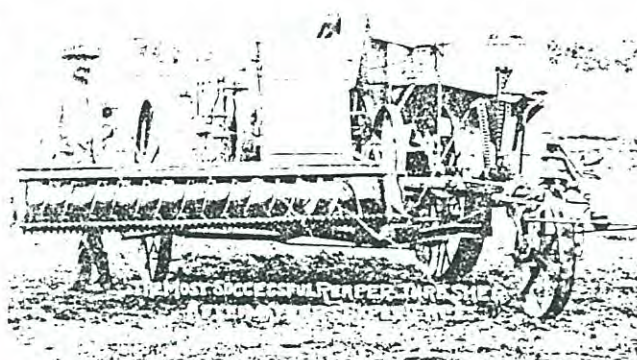
responsible for all other machinery development as well. Taylor's new six-horse "Sunshine Headers", built at the McKay works, performed well during 1916-1917 harvest.

The demand for the Taylor machines grew and one thousand Sunshine Headers were scheduled for the 1920-21 harvest. The factory worked day and night to meet the demands of an anticipated bumper crop. When the time came, the machines were proven beyond dispute, for late storms throughout Eastern Australia flattened the fence-tall crops. The Headers were equipped with "Headlie" crop lifters (long wooden fingers that lifted the crop up to the comb), and the machines astonished farmers by gathering up to 30 bushels an acre from wheat crops they thought ruined. Never before had such tangled crops been harvested without sustaining severe loss. Australian farmers rescued millions of bushels of grain and the Sunshine Header won a reputation as "the greatest harvesting machine of all time".

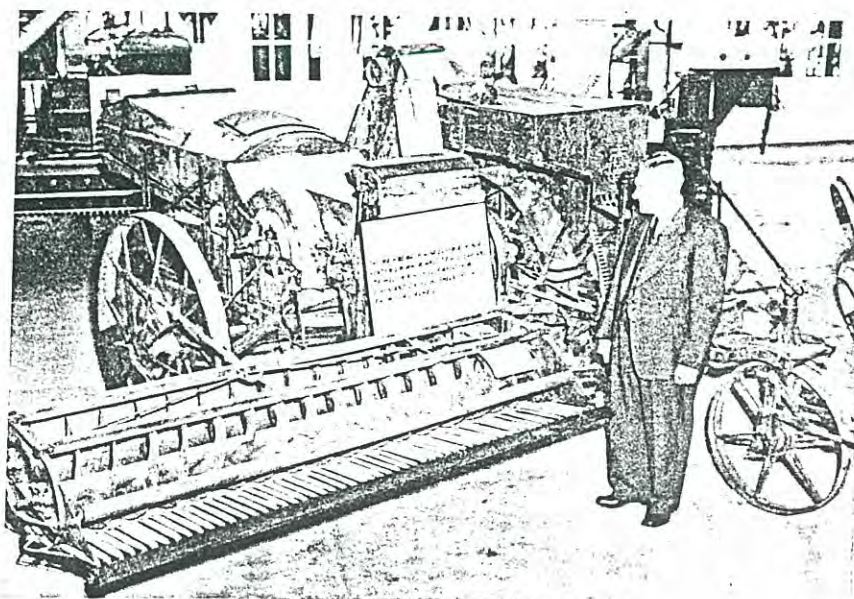
Given "the freedom of the works", Taylor piled success upon success—the first once-over harvest of field peas; auxiliary gasoline engine-driven headers; Sunshine rice headers that were used in the first Australian-grown rice, and his crowning achievement; the Sun Auto Header.

The Sun Auto Header

The Sunshine SP Header or "Sun Auto Header" was a joint Taylor-McKay development. They took out their first patent in July, 1923 and others the following year. The Sun Auto Header was the first commercial combine with a T-shaped configuration of platform and separator. The great virtues of this arrangement that no crop was run down and there was a symmetrical feeding to the cylinder. The first production models, released in 1924, had a 12-ft cut and were propelled by a Fordson engine. Ground drive was through the single left hand side driving wheel. The Auto-Header continued with



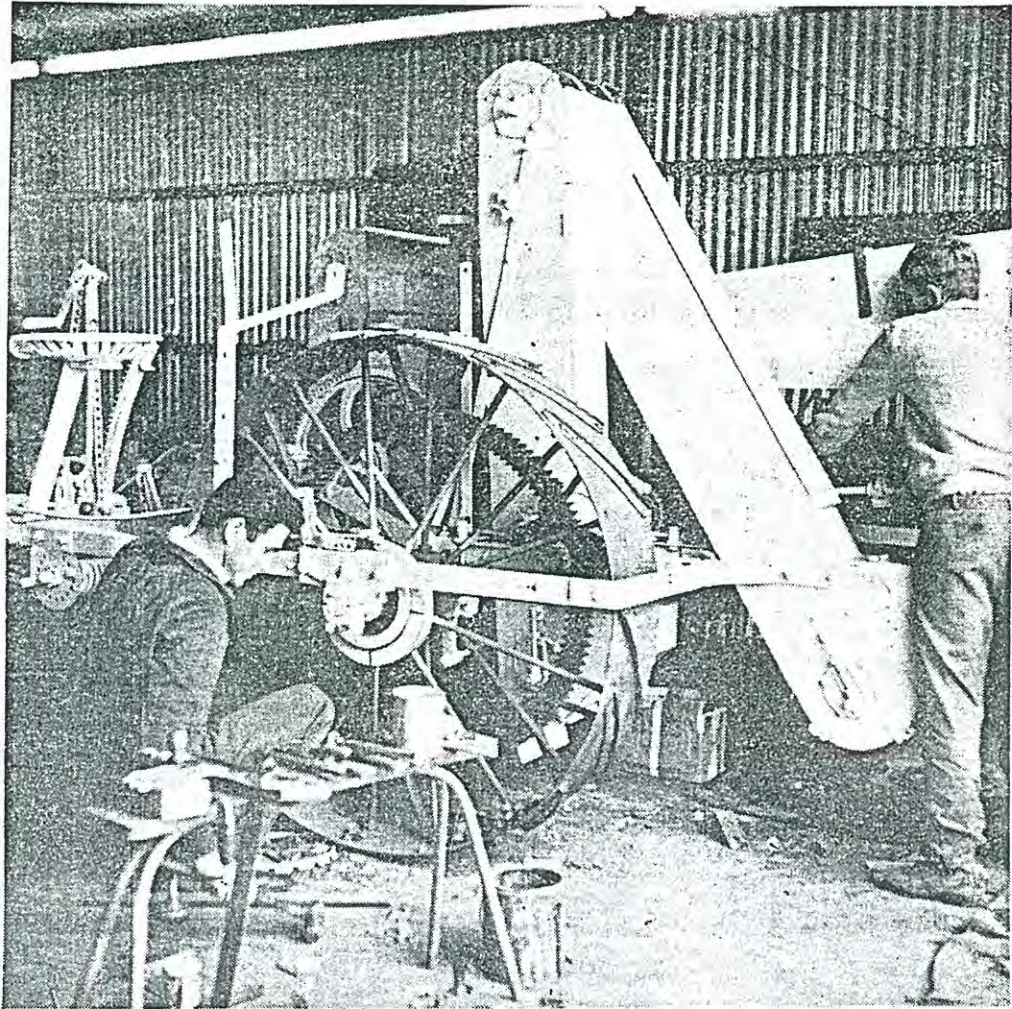
Above: Headlie Taylor with his 1914 header. The label "header" has stuck to Australian combines ever since Taylor's day. The term "combine" is reserved in Australia for combination cultivator-drills; Below: Cross-section shows the relationship and functions of the twin-auger platform designed by H.S. Taylor.



One of the 1915 headers made in Melbourne under contract for Taylor and purchased by A.J. Kendall of Henty. It was used by Kendall for 13 years to harvest 135,000 bushels of cereal grains. That's Taylor in this 1954 picture.

**Copies of newspaper articles
relating to the restoration of the
Headlie Taylor Header
and the commemorative display
at the Henty Park, Henty**

HISTORY BEING RE-BUILT



A little bit of history is being re-built at Henty. It is one of the first headers designed by Headlie Taylor, who was born in Henty on July 7, 1883—89 years ago today.

The machine is being rebuilt by members of the Henty branch of the United Farmers and Wool-growers' Association.

Many of the branch's members have been working on the project. They began about four weeks ago, building the machine up from a basic frame. They expect to have it finished within another fortnight.

It took Headlie Taylor three years to build his first header. But the present builders have had some advantages to speed their job.

Most of the parts have been available to them, where Taylor had to make his own, in his crude farm workshop, using a forge, a lathe and drilling gear.

IDEA TO RE-BUILD
The idea to re-build the machine came from a branch meeting, when members decided that since the first machine had been made there, they should re-build one as a memorial to Headlie Taylor.

For 12 months they collected old machines and parts wherever they could find them. In some places they collected basic machines, and from some farm scrap-heap they collected parts.

Since the building project began four weeks ago, about four farmers a day from the district have been working on it.

SUPERVISOR
Frank Howard, from Milbrulong, near Lockhart, who actually worked one of the headers, is supervising the construction. His knowledge of the machine has been vital to hopes of the branch that the re-built machine will be right in every detail.

"He's got a fantastic memory for the details," Milton Taylor said last week. "We'd not have got it really right without him."

FIRST IN 1913
Headlie Taylor built his first header in 1913. It was a success because it was the only machine available which would handle damaged crops. It quickly swept Australia and throughout the world, and it is still the

best harvesting machine of its type.

It has even been acknowledged recently in American technical journals as the basis of modern world harvesting practice.

First patents were taken out in October 1913, and the machine was shown for the first time at Henty Show in 1914.

Later he had five made in Melbourne, and the machine being renovated at present is the third of these.

RAIN PROLONGS SOWING

Comparatively light rain fell in the south-west agricultural region during June, the district agronomist at Finley, Mr. D. E. Toohey, reported yesterday.

The rain, however, prolonged crop sowing in wet patches of cereal paddocks. It also delayed late sor-

ghum and maize harvesting.

Here are rainfall figures for the South-West agricultural region:

Corowa shires were covered by water.

Follow-up falls of an inch or more were needed throughout the region this month.

Mr. Toohey said increases of acreages sown to rice in the Berrigan Irrigation District was expected next summer.

There would be more than 200 new rice growers in the B.I.D. and smaller increases in other Murray Valley districts.

Two special schools would be held to help the new growers. Dates for the schools had yet to be arranged.

	June Pts.	Year total Pts.
COROWA	66	1465
OAKLANDS	78	1328
URANA	86	1344
JERRILDIERIE	46	1328
BERRIGAN	50	1474
TOCUMWAL	54	1431
FINLEY	50	1335

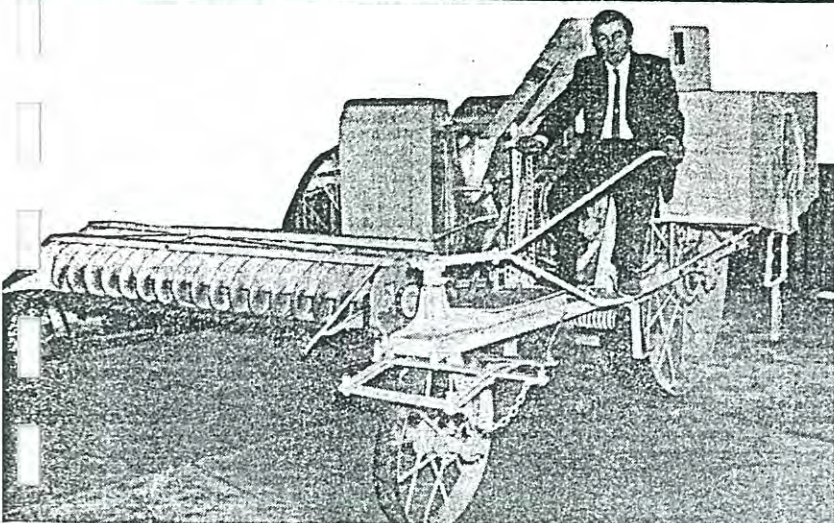
Mr. Toohey said the total harvested acreage of wheat this year was expected to be lower than was forecast earlier in the year. He suggested two reasons:

- Some farmers, because of the wet sowing season, had reduced their plantings;
- Large areas on many farms in Berrigan and

Boerder Morning Mail
7 JULY 1969



FOR THE MAN ON THE LAND



World's first header being reconstructed

Down Henty way in the last stages of reconstruction is one of the first wheat headers ever built in the world.

Typically it is sitting in a tin shed, admittedly a much larger and more modern tin shed than the one in which the header was devised in 1913 on a property near Henty, but still a tin shed.

The almost completed header is being rebuilt and restored to original condition by members of the Zone Seven branch of the United Farmers and Wheat-growers' Association.

Members and helpers have scoured the state of N.S.W., particularly the south western area, over the past 13 months for many of the parts that have gone to

make up the composite original.

The local U.F.W.A. branch has been inspired in its efforts to re-build the header by the fact that the man who built the very first one in the world did it only two miles from the township of Henty.

Young inventor

In the spring of 1914 an eager young inventor called Headlie Shipard Taylor displayed his new wheat harvesting machine at the local show. All the town was talking about his new machine, the result of three previous machines he had patented the year before.

Up till this point wheat farmers had been enthusiastically using an American machine, the Stripper Harvester, invented in 1884, which combined the processes of stripping, winnowing and bagging.

At this point it was the best machine on the market, having been modified by Australian farmers and further American development.

What farmers were looking for as they moved into the new century with increasing cereal production, greater acreages and higher yields, was a fresh approach to collect wheat grains even more economically than the efficient Stripper Harvester.

The dramatic answer to this problem came in 1913 when Headlie Taylor patented his Header Harvester, which was first known as a reaper-thresher and later identified as the Header.

This was a vital step in the history of wheat harvesting machinery.

It swept Australia and the world and is still the best harvesting machine of its type—acknowledged in recent years by American technical journals as the basis of modern world harvesting practices.

Taylor, who was born at Henty, N.S.W., on July 7, 1885, began his project with the knowledge that wheat farmers needed a machine to rescue the grain from down and tangled crops, which

ANNUAL HORSE AND PONY SHOW TO BE HELD IN NOVEMBER

The N.S.W. Show Jumping Competition will be conducted at the Annual Horse and Pony Show at the Sydney Showground on November 29 and 30.

The N.S.W. branch of Australian Pony Stud Book Society, in conjunction with the Arab Horse Society of Australasia will be organising the competition.

For the first time there will be classes for led quarter horses and the chairman of the organising committee, Mr. C. Jorden, said that entries for the show would close on Friday, October 10 and schedules and entry forms were available at the Sydney Showground or from Box 4317 G.P.O., Sydney.

Classes will be provided for led stud ponies, Arabs, Anglo Arabs and pari-bred Arabs in addition to quarter horses whilst there will also be classes for saddle and harness animals. Classes will be provided for pony club teams twelve years and under and for open teams. There are also classes for boy and girl riders.

Full details of the jumping competitions are not available but three events will be conducted on Sunday November 30.

Mr. Jorden said that he was hopeful that the number of entries would exceed those received for the 1968 Show which had attracted good entries in almost all sections.

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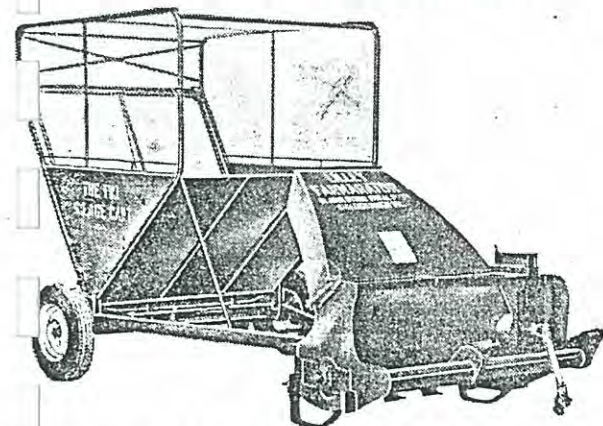
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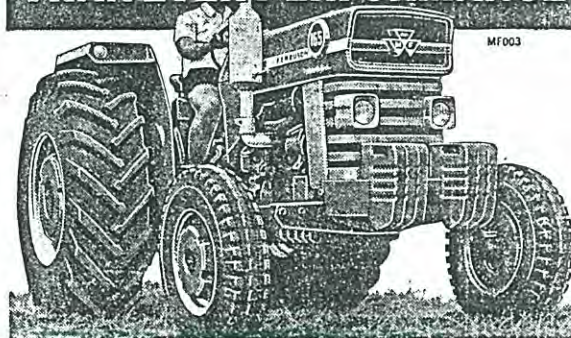
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Symbol of Reality

The symbol used by the Henty Field Days Committee, that of the Headie Taylor Header, previously only a drawing, will be seen in actuality as the re-built machine, photographed on this page, restored to somewhat of its former glory, takes pride of place among the gleaming monsters at the Field Days to take place at "Calool" on Wednesday and Thursday next.

"Calool" is situated on the Olympic Highway between Henty and Culcairn and the organisers are looking forward to a record result.

Performing the official opening will be Mr. Claude Renshaw, General President of the U.F.W.A., which will take place at 1.30 p.m. on Wednesday.

Other official guests are Mr. Brian Regan, General Secretary of the U.F.W.A., and Mr. Vince Morris, Editor of the "United Farmer."

The first day's programme consists of demonstrations of large tillage equipment, both trailed disc plows as well as feed mixing machines and superbroadcasters and fire fighting equipment.

Following upon the official opening the afternoon's programme will be taken up with demonstrations of mowers, conditioners, wind-rows and rakes.

The second day's programme with consist of demonstrations of Trailed Scarifiers, Cultivating Bars, cultivating Drills, Rotary Mowers in the morning and during the afternoon Balers Bale Loaders, Forage Harvesters, Bale Sledge and

HIGH SCHOOL

TEACHER IS

MISS SOUTHERN

RIVERINA

Susan Quirk, a science

The

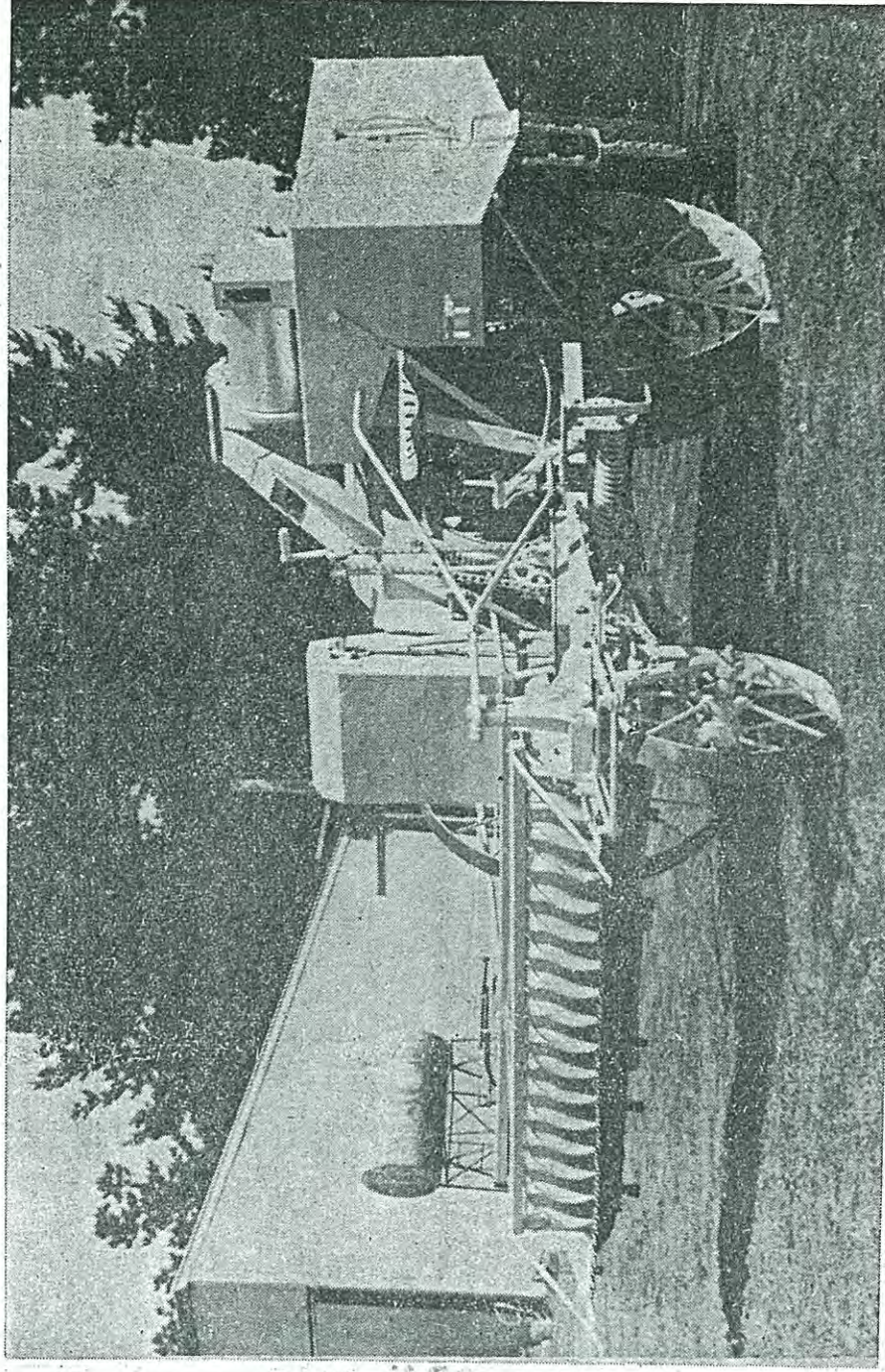
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**We Celebrate our
Sixty-Fourth Year**

Women's Interest

The section of the Field Days this year devoted to

District Project . . .

10th Oct 1969.

Housing the Header

President of Zone Seven U.F.W.A. Field Days Committee, Mr. Ern. Howard, of Milbrulong, and Mrs. Howard, display the artist's conception of a building to house the restored Headlie Taylor Header. The design is the work of Mr. John Newton Taylor, B. Arch., a son of the inventor.



The building has provision for electrically operated doors or sides and a system of floodlighting to bring out the features of the header, and ramps leading up to the display unit.

Mr. Howard commented that although at first glance the project of building the structure would be beyond the resources of the U.F.W.A., the value of the header and when the need to present it in the best possible manner is fully appreciated, the project may well come within the means of the district.

Besides the Headlie Taylor Header on display were the Oilpull Tractor, which went to the fields days under its own power, and the stripper, both of which in their original condition caused great interest among the visitors, particularly when the tractor was started up belching white smoke from its funnel-like exhaust system.

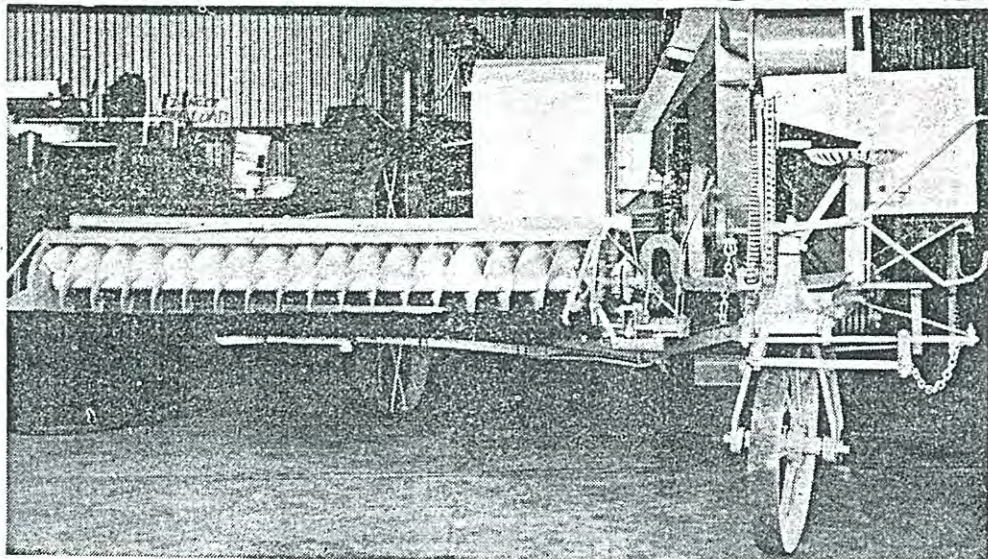
THE OBSERVER
10 October 1969



ABOVE: Mr. Taylor with the plaque he will unveil tomorrow.

BELOW: An artist's impression of the proposed pavilion to house the restored header.

FARM PIONEER SAVED



ABOVE: The fully-restored Headlie Taylor header in Mr. Milton Taylor's barn near Henty.

Henty honors header

By LINDA HORNSEY

Early this century, Headlie Shiphard Taylor built a header in his workshop, about two miles from Henty.

In 1913 he sold the patent rights to H. V. McKay, and then become workshop foreman for McKay.

For the past four months, members of Henty branch of the United Farmers' and Woolgrowers' Association have been restoring a header dating back to 1913.

The basic frame of the machine, known as the Headlie Taylor header, is one of the first six mass-produced by H. V. McKay.

Hugh Victor McKay's grandson, Mr. H. V. McKay, of Henty, donated the frame to the association.

Mr. Milton Taylor, whose wife is the niece of Headlie Taylor, is president of the restoration committee.

He said it was restored to working order from component parts of three machines and there would be no chance of obtaining another like it.

Same basis

He said the principle of the 1915 header and the latest model had not altered.

"The early model has

a box capacity of 12 bushels, and the new a capacity of 97 bushels.

"Ten acres covered by the Headlie Taylor header in a day would be considered pretty fast going.

"My header does about 100 acres a day."

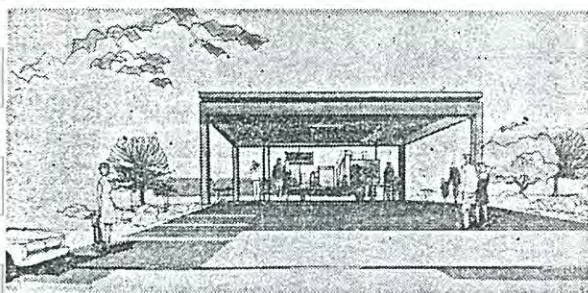
Mr. Taylor said the header would be exhibited at Henty Memorial Park and eventually would be housed in a pavilion.

Plans for the pavilion have been prepared by a Box Hill architect, John Newton Taylor, the youngest son of Headlie Taylor.

Plaque

Mr. Taylor will unveil a commemorative plaque at the park at 2.30 p.m. tomorrow, during Henty's bi-centenary ceremony, which will be attended by Culcairn Shire President, Cr. Schoff.

A presentation will be made to Mr. Frank Howard, of Milbrulong, who supervised restoration of the header.



NEW WHEAT QUOTA BID

SYDNEY, Wed.: N.S.W. graziers will ask the State Minister for Agriculture, Mr. Crawford, to alter the Wheat Quotas Act and allow basic quotas to be established

The N.S.W. Graziers' Association's annual conference carried a resolution calling for the alteration of the Act, the Grain Elevators Act and the Wheat Industry Stabilisation Act to allow a number of other provisions to be made.

Mr. F. M. Davidson of the association's council successfully moved that for purpose of allocating the 1971 N.S.W. quotas, individual basic quotas be adjusted on a flat-rate percentage basis.

Other resolutions carried proposed that:

- Except in exceptional cases, no further large country storages be constructed after completion of the present 200-million bushel target;

- The association ask the Grain Elevators Board, on completion of this, to shift the emphasis on construction from country to terminal storage; and

- Where necessary to improve segregation facilities, multiple bin verticle storages be built.

- Three-year quotas sought, P.10.



● Mr. Crawford